Rubber Journal and International Plastics

VOL. 139 NO. 7 AUGUST 13 1960 Price 1s. Weekly

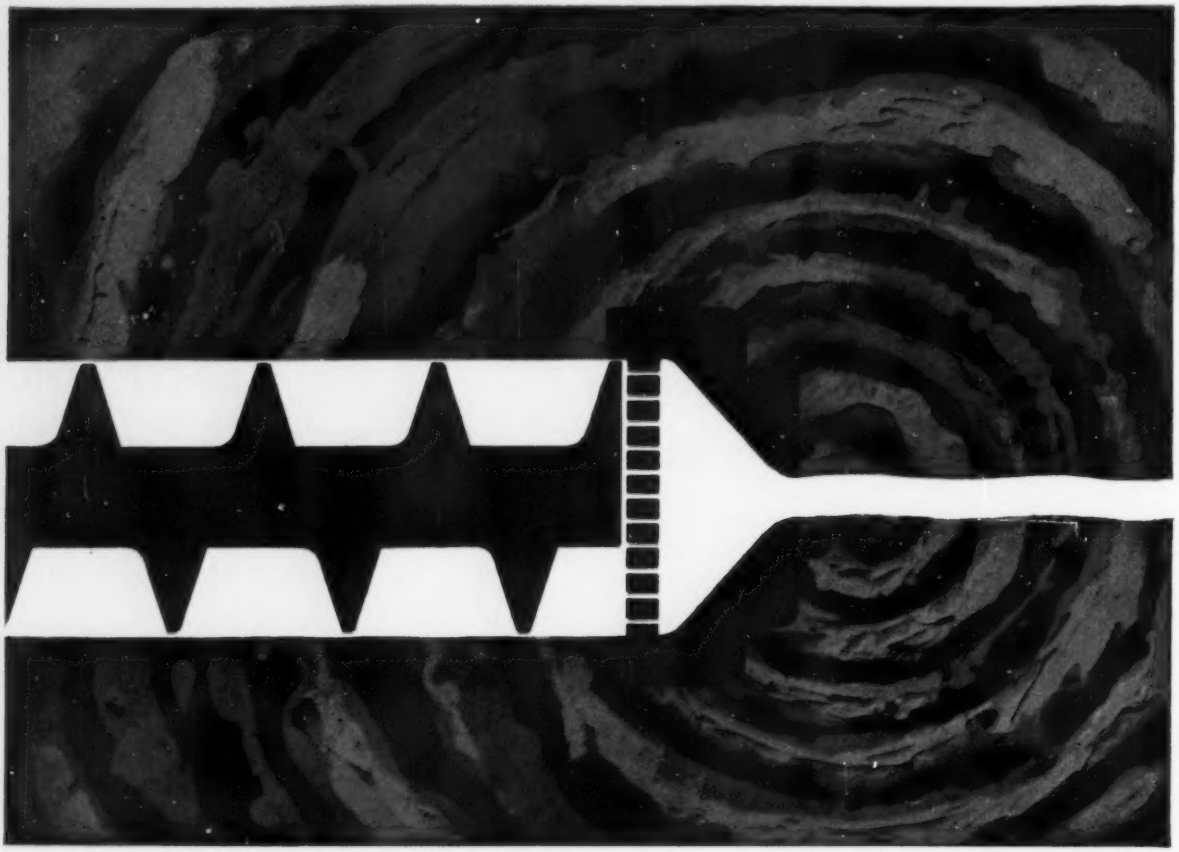
DIXIE

A BRITISH MADE HAF BLACK

DIXIE 60 processes easily and gives high resistance to abrasion and flex-cracking. DIXIE 60 is now manufactured in the UK to the same high standard of uniformity and quality maintained by its American counterpart over many years.

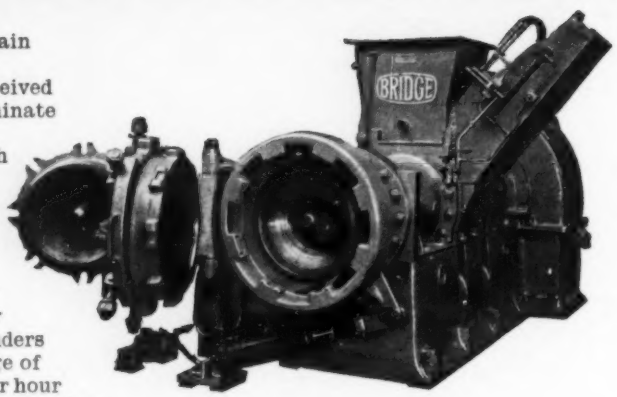
ANCHOR CHEMICAL COMPANY LTD - MANCHESTER 11

London Office: Grand Buildings, Trafalgar Square, W.C.2
Scottish Agents: J. & G. Hardie & Co. Ltd., 178 Fulton Street, Glasgow, W.3
American Liaison and Service Branch: British Anchor Chemical Corporation, 366 Madison Avenue, New York 17, N.Y.



Bridge Extruders are an essential link in the chain of continuously expanding production. Designed for the processing of rubber stocks received directly from Bridge-Banbury Mixers, they eliminate the bottlenecks of numerous mill operations.

Being fully automatic, with drive to match the mixing cycle time of the Bridge-Banbury Mixer, they require no operators, occupy comparatively little floor space, improve manufacturing efficiency and reduce handling costs. Designed to maintain round-the-clock operation at completely stable thermal conditions and ensure optimum quality production at all speeds. Bridge Precision Extruders for all purposes are available in a complete range of sizes from one capable of extruding 20,000 lbs. per hour of uniform stock, down to small special-purpose extruders.



Bridge Automation is continuous production.

We invite you to discuss your technical problems or requirements with us . . . without the slightest obligation on your part.

BRIDGE

PRECISION EXTRUDERS

. . . ACCLAIMED AS THE ULTIMATE IN PRODUCTION EFFICIENCY

DAVID BRIDGE & CO. LTD. CASTLETON, ROCHDALE, LANCASHIRE

In technical association with Farrel-Birmingham Co. Inc. Ansonia, Conn., U.S.A.

'Phone Castleton, Rochdale, 57216 'Grams: Coupling. Phone Castleton Lancs.

London Office:
Broughton House, 6, 7, 8 Sackville St. Piccadilly, W.1. 'Phone Regent 7480. Grams & Cables: Ederaceo, Piccy, London.

IT'S ALMOST MAGICAL!

. . . the smoother calendering and faster extrusion of

Magecol SRF-H FURNACE BLACK

(Manufactured by Columbian-General Blacks Ltd.)

To manufacturers of footwear, moulded and extruded products, belting, bead wire insulation, carcass stocks for passenger tyres and wire covers, etc., this beaded, free-flowing Carbon offers outstanding advantages in processing operations and economy.

PURITY. Instead of conventional sieving, highly selective screening is used in the production of Magecol, resulting in a residue of only 0.004% on a 300-mesh screen. No other Furnace Black matches such purity.

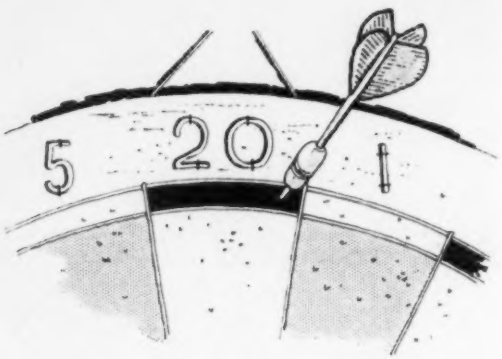
Please write or telephone for technical bulletins about Magecol from the sole selling agents

COLUMBIAN INTERNATIONAL

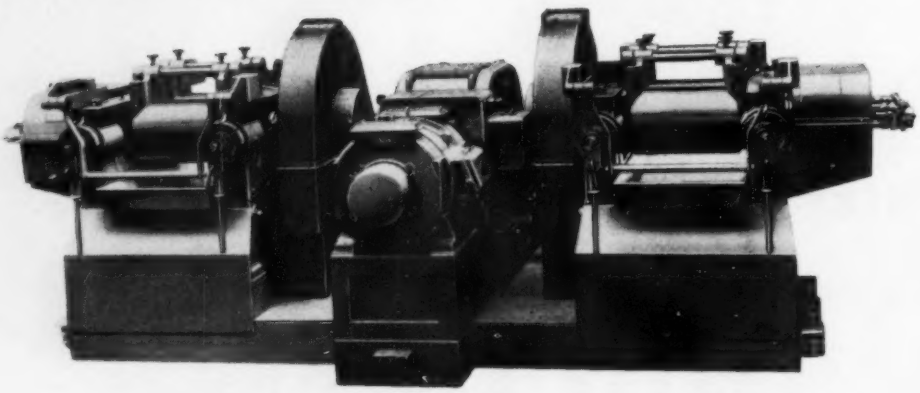
(GREAT BRITAIN) LIMITED

116 CANNON STREET, LONDON, E.C.4. Telephone: MANsion House 5277-9. Telegrams: Noirceur, London

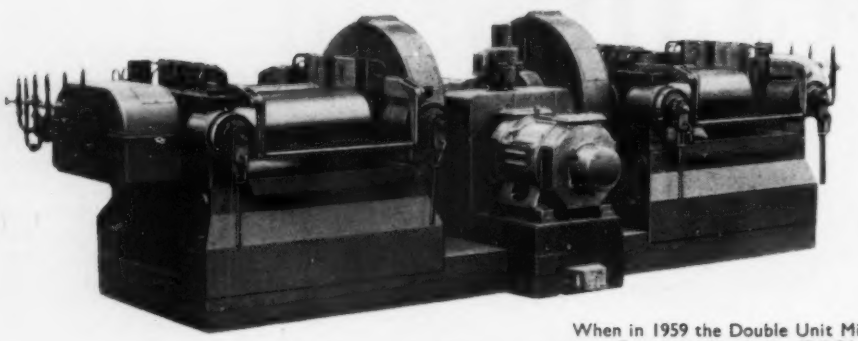
DOUBLE TOPS
DOUBLE TOPS



INCREASED PRODUCTION–
REDUCED SPACE REQUIREMENTS



C.E.12 Double Unit Mixing Mills with central drive mounted on steel sub-frame, fitted with vibro insulators. Rolls 16" dia.



C.E.11 Double Unit Mixing Mills with central drive mounted on steel sub-frame, fitted with vibro insulators. Rolls 18" dia.

It's no longer **BIG NEWS** but
STANDARD PRODUCTION!

When in 1959 the Double Unit Mill, mounted on vibro insulators, was first introduced by IDDON Bros., it created widespread interest throughout the industry.

This layout has now become an accepted standard of modern factory planning.

The consultation service of our technical staff is freely available.

IDDON
BROTHERS LIMITED

LEYLAND • LANCASHIRE

Telephone: LEYLAND 21258 *Telegrams: IDDON, LEYLAND*

LONDON Representative: Mr. J. Summers, Room 16, 4th floor, Abford House, Victoria, London, S.W.1. • Tel.: VICtoria 1488

U.S. and CANADIAN Technical Sales and Service: THE WILMOD MACHINERY CO. LTD., 28 Jutland Road, Toronto 18, Ontario, Canada.
Telephone: C.L. 1-2229-0 Cables: Wilmo, Can, Toronto.

MANUFACTURERS OF MIXING MILLS, PRESSES, CALENDERS, AND AN EXTENSIVE RANGE OF MACHINES FOR RUBBER AND PLASTICS INDUSTRIES

RGANIC COLOURS

powder and master batch form suitable for rubber and p.v.c

Serving the Rubber Industry since 1872

BRR

BRITISH RECOVERED RUBBER & CHEMICAL COMPANY LIMITED

Ashton New Road Clayton Manchester

Telephone East 3241/6 Telegrams Reclaimed Manchester

Scottish Agent R. M. Wilson 227 St. Andrews Road Glasgow S.1

LONABARC

LIMITED

DEODORIZER 300

Masks unpleasant odours.

Economical – adding little to your costs

Samples and technical literature available

Sales Office: CRANBROOK ROAD, ILFORD, ESSEX.

Phone: VALentine 6461/2 *Grams: Lonabarc Easphone London.*

For

A.I.D. APPROVED

MIXING
MOULDING
DICING

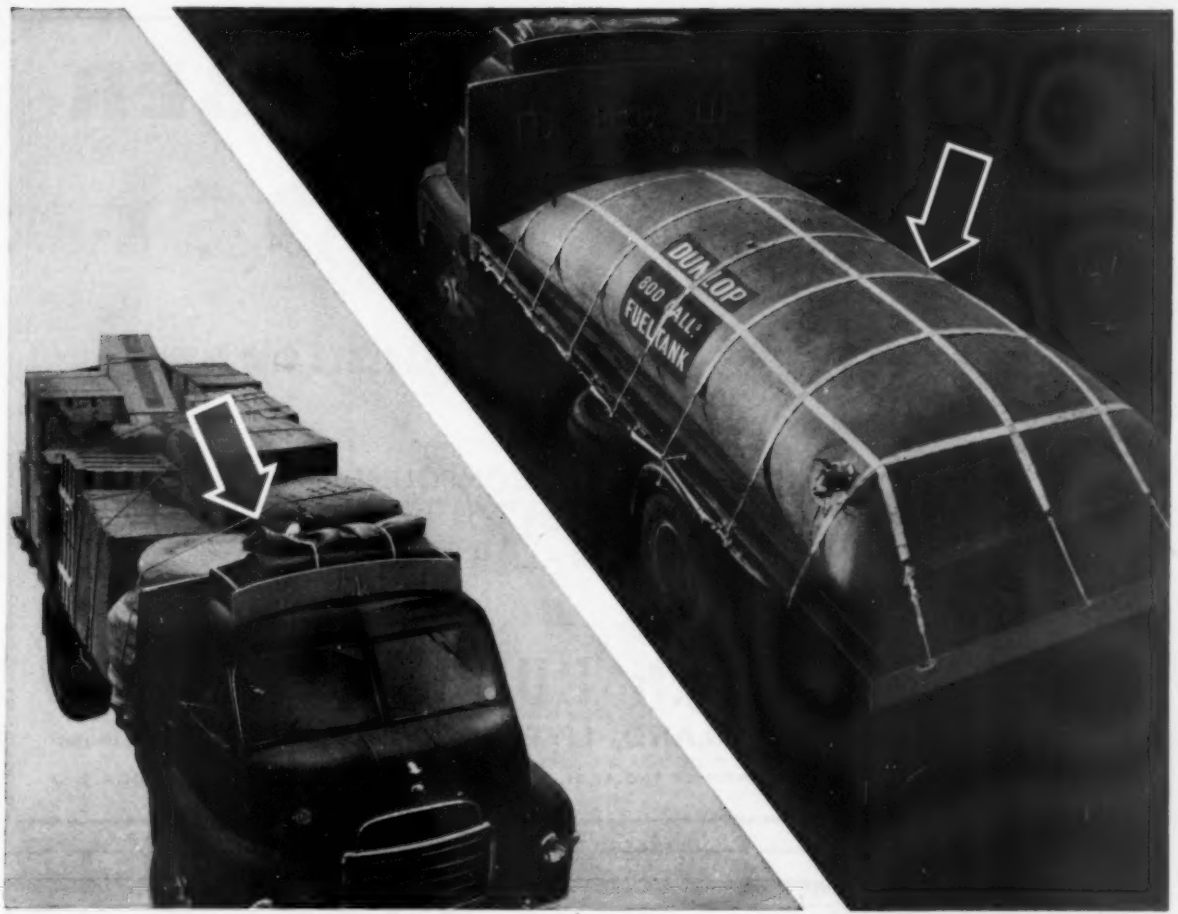
Rubber or Plastics

Enquire:

HATCHAM RUBBER CO. LTD.

PRINCES WAY, WADDON, CROYDON, SURREY

PROMPT SERVICE • ***Telephone: CROydon 6054/6***



Photographs by Courtesy of Dunlop Rubber Co. Ltd.

A——B
General Freight Haul

B——A
Auxiliary Fuel Tanker

Nylon-reinforced collapsible containers are revolutionising the transport and storage of liquids in bulk. These containers are made from nylon fabric coated on the outside with neoprene, a synthetic rubber resistant to weathering, and on the inside with a variety of natural or synthetic rubbers according to the liquid to be carried.

Containers of standard capacities of 250, 500, 800 and 1000 gallons can be folded easily when empty, occupying a very small space and may be carried above the cabin of a loaded lorry. Nylon is used as a base fabric because it is exceptionally strong, light in weight, and rot-proof.

Fully economic loads for trucks making return journeys — Economical reductions in the size of road tanker fleets — Easy storage of fuel on sites and water on desert undertakings — Simply mounted flotation bags for supporting loads over water — Containers tailored to fit vehicle bodies and aircraft fuselages — these are just a few of the advantages of the nylon-strengthened collapsible container.

It's *Nylon* for strength British Nylon Spinners Limited

RECLAIMED RUBBER

ALKALI—NEUTRAL—HEATER
SPECIAL PLANT FOR RECLAIMING
SYNTHETICS ON CONSIGNED BASIS
AQUEOUS DISPERSION RECLAIMS

Established *in 1901*

FIBRE STOCKS AND COMPOUNDS
VULCANISED BITUMEN FOR CABLES
MIRTEX MINERAL RUBBERS

NORTHWESTERN RUBBER CO. LTD.

Telephone: Bootle 2064 and 2065 **LITHERLAND, LIVERPOOL 21** *Telegrams: Rubric, Phone, Liverpool*

Agents for LONDON SOUTH WALES AND WEST OF ENGLAND: WILFRID SMITH LTD. 16 PHILPOT LANE LONDON, E.C.3

OSWALD & DUNCAN LTD

COTTON AND SYNTHETIC YARNS

AND CLOTHS

FOR INDUSTRIAL PURPOSES

Tyre Fabrics *Belt Ducks*

MAYFIELD MILL · ROCHDALE

Telegraphic Address
OSWALDUN ROCHDALE

Telephone
ROCHDALE 40221

factice

for

NATURAL AND SYNTHETIC RUBBERS

WHITE
GOLDEN
DARK

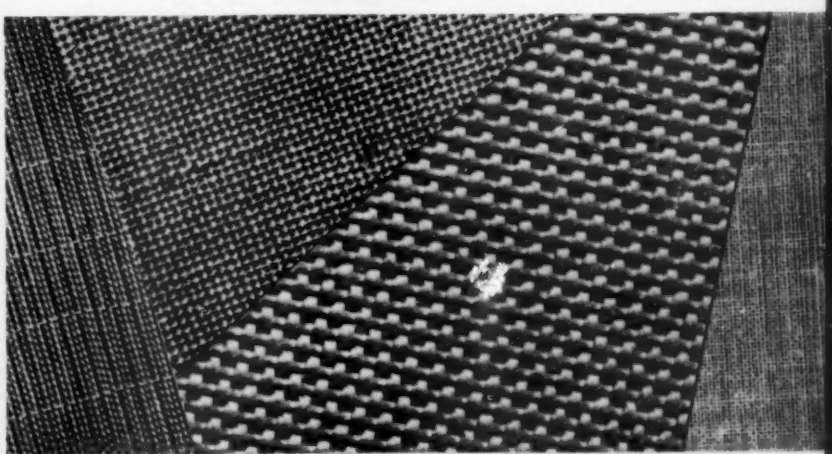
chemicals for rubber and plastics

J. ALLCOCK & SONS LTD

WEST GORTON, MANCHESTER 12

Telephone: EAST 0173 · Telegrams: Rubbasub M/c 12

TEXTILES *FOR THE* RUBBER *AND* PLASTICS INDUSTRIES . . . . . .



Reinforcing Fabrics for

HOSE
TYRES
BELTING
SHEETING
FOOTWEAR
PACKINGS
VEE ROPES

RAYON
NYLON
COTTON
TERYLENE

PRESTON TYRE FABRIC MFG. CO. LTD.

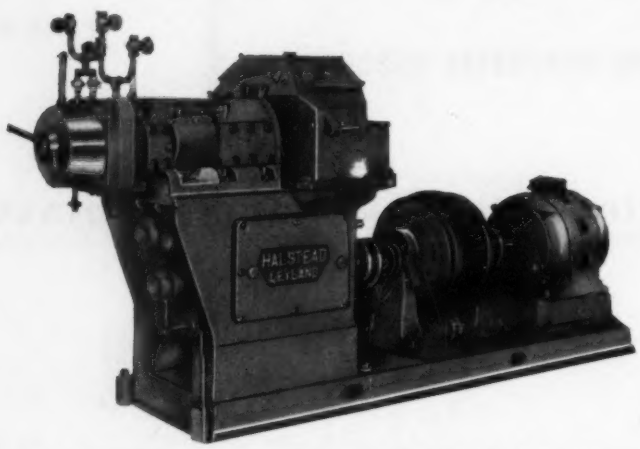
HIGHER WALTON, PRESTON Telephone: PRESTON 85251 (4 lines)

HALSTEADS ENGINEERS (Leyland) LTD

LEYLAND, LANCASHIRE

Telephone : Leyland 21529

Rubber and Plastic Engineers



3½" rubber extruder with variable speed dynamatic coupling drive

JAMES FERGUSON & SONS LTD.

Lea Park Works, Prince George's Road, Merton Abbey,
London, S.W.19

A. S. HARRISON & CO., Pty. Ltd., 85 Clarence Street, Sydney, Australia.

ANDRE BERJONNEAU, 10bis rue Descombes, Paris, 17°, France.

JOSE DELCLOS MOLLERA, Angel Baixeras 39 Barcelona (2), Spain.

EINAR HOLMARK, 19 Gl. Kongevej, Copenhagen V, Denmark.

the largest manufacturers of

EBONITE DUST

offer you

The choice of several Standard Grades Uniform in Specific Gravity, Ash Content, Etc., Etc.

Also Grades prepared to Customer's own specification Standard Mesh 120

Telephone Nos.: MITCHAM 2283-7 Telegraphic Address: NESTORIUS, SOUPHONE, LONDON

WILFRID SMITH LIMITED

RUBBER CRUMB
MINERAL RUBBERS
METALLIC STEARATES
WHITING, FILLERS
CALCIUM SILICATE
RECLAIM, COMPOUNDS
MASTERBATCHES
PROCESSING AIDS, Etc.

"UKARB"
Carbon Blacks

"CATAPLAS"
Reinforcing Resins
for Synthetic and
Natural Rubbers

16, PHILPOT LANE · LONDON · E.C.3

Telephone: MANsion House 2064/8. Telegrams: Accollyst, Bilgate, London

Rubber Proofing

OF ALL FABRICS FOR THE WATERPROOF GARMENT INDUSTRY

"AQUACHECK"
CUT TAPES & NON CONS
(biased and straight)

Interlinings for the Rainproof Trade.
Proofed Piece Goods.
Specialists in Proofing for Bags.

Proofing for Ground Sheets, Motor Hoods, Covers for Lorries and Stores, etc.

ALFRED O. FERGUSON & CO. LTD.

WINDSOR MILL, HOLLINWOOD, OLDHAM

Telephone: Failsworth 2206
Telegrams: Nonporous Hollinwood Oldham

London: Bush House, Bush Lane, E.C.4
Telephone: Mansion House 0781

Remember the name

ROBAC

for Dry Rubber Accelerators

Technologists everywhere specify ROBAC Dry Rubber Accelerators for a reliable cure *with complete confidence*. The familiar trade mark 'ROBAC' is a well-known symbol of quality and dependability, backed by many years' experience and research in manufacturing problems. Technical brochures are available on request.

Specify ROBAC Rubber Accelerators for a reliable cure for Hot Water Bottles, Rubber Tiling, Flooring and Sheeting, Rubber Footwear, Playballs and Toilet requisites etc.

ROBAC

DRY RUBBER ACCELERATORS

ROBINSON BROTHERS LIMITED, RYDERS GREEN, WEST BROMWICH *Tel: West Bromwich 2451/3*

1.W.60

Editor: RICHARD ROWLAND

Technical Editor: R. T. NYE, M.A.

Assistant Editor: PETER RANSLEY

Editorial Director: J. D. COPEMAN. Consultant Editor: H. J. STERN, B.Sc., Ph.D., F.R.I.C., F.I.R.I. Advertising Director: C. B. COPEMAN. Advertising Manager: A. S. KINGHAM.

UK Area Representatives

M. J. Whelan, London, Eastern Counties, Huntingdonshire, Hertfordshire, Bedfordshire, Buckinghamshire, Northamptonshire, Kent, Surrey and Sussex (Operating from London Office)

L. Quy, South and West of England and South Wales (Operating from London Office)

A. J. Legg, 55 Lee Lane West, Horsforth, Nr. Leeds. Tel. No. Horsforth 3845, North-East England, Lancashire, Yorkshire, Nottinghamshire, Lincolnshire and Derbyshire

W. Brown, 13 Allerton Road, Southport, Lancashire. Tel. No. Southport 5121, Scotland

E. A. Daniel, 'Brockenhurst,' 211 Dower Road, Four Oaks, Sutton Coldfield, Warwickshire. Tel. No. Four Oaks 2098, Midlands (excluding Staffordshire North of the A.5), Cheshire and North Wales

E. Burgess, 40 Parkside Drive, Maybank, Newcastle-under Lyme. Tel. No. 64678, Staffordshire North of the A.5

Overseas Representatives

Belgium—Albert Milhado & Co., G.m.b.H., Pompstraat 2, Antwerp

France—R. K. Larke, 7 Rue Pilaudo, Asnieres (Seine). Tel. No. Gresillons 42.24

Germany—Albert Milhado & Co., G.m.b.H., Charlottenstrasse 32, Dusseldorf. Tel. No. 27217

Italy—Massimo Fano, Via V. Minto 14, Milan. Tel. No. Milan 808135

Netherlands—G. Arnold Teesing, Rubensstraat 68, Amsterdam, Z. Tel. No. 727913

United States—Overseas Publishers' Representatives, 29 West 34th Street, New York 1, N.Y. Tel. No. Bryant 9-0794

Rubber Journal and International Plastics

Volume 139 **Price 1s. Post free 1s. 4d.** **No. 7**

IN ITS 77th YEAR

August 13 1960

Editorial

NOTES OF THE WEEK 225

Articles and News

NEWS BRIEFS 226
LATEX INSTALLATION EXPANDED 228
PTFE COATED GLASS FABRICS 229
PLASTICS IN THE NETHERLANDS 230
METAL BOX LAUNCH DIOSACKS 231
PLASTICS AT WORK 232
RRI MALAYA 237
FROM METAL TO PLASTICS 243
WELDING CELLULOSE ACETATE BOXES 245

Features

MEN AND MATTERS 238
QUESTION CORNER 241
RUBBER STATISTICS 246
PATENT SPECIFICATIONS 247
RUBBER AND PLASTICS STOCK MARKET 248
RUBBER MARKETS 249
INDUSTRY INTELLIGENCE 250
TRADE MARKS 251

Classified Advertisements . . . 252 Advertisers Index . . . 256

MACLAREN HOUSE, 131 GREAT SUFFOLK STREET, LONDON, S.E.1

Grams: 'Buns, Souphone, London' Phone: HOP 5712

Annual Subscription, including Postage: United Kingdom and Oversea, £2 15s.; Index (half-yearly), 10s. per annum extra. Published weekly. Registered at GPO as a Newspaper. Registered for Transmission by Canadian Magazine Post. Entered as Second Class matter at Post Office, Boston, Mass. USA, under the Act of March 3, 1879 (Sec. 397 P. L. and R.)

★ Please send for our comprehensive leaflet, which gives technical data and details of applications quoting ref. RJ2

HUNT HEAT TRANSFER EQUIPMENT

HUNT HEAT EXCHANGERS LTD.
MIDDLETON MANCHESTER

London Office: Temple Chambers, Temple Avenue, E.C.4.
Telephone: Ludgate Circus 7796 7

HH 2

belts made with DU PONT NEOPRENE resist oil, heat and flame

Du Pont neoprene is an ideal material for belting: it is both oil and flame resistant, withstands sunlight, weathering and chemicals, and has excellent resistance to abrasion.

For colliery belting pictured below, Du Pont neoprene stands up remarkably well against acid mine water, mildew and the constant abrasion of heavy coal-loads, while its excellent flame resistance is an important safety factor.

For conveyor belting oil and abrasion resistant Du Pont neoprene provides a resilient cover that will not stiffen or crack at low temperatures. Neither will it soften or melt under severe frictional heat conditions. The elastic neoprene cover also grips drive pulleys firmly; helps them deliver full power.

For transmission belting a material is required that is resistant to both the oil and grease from bearings and the heat generated by high-speed use. Du Pont neoprene has proved that it has just the properties to resist these forms of wear and give greatly extended life to drive belting.

Belting made from Du Pont neoprene lasts longer, saves repair time and keeps down maintenance costs. Contact your supplier or post coupon below for suppliers.

DU PONT REG. U.S. PAT. OFF. Established 1802

NEOPRENE

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

Du Pont Company (United Kingdom) Ltd.,
76, Jermyn Street, London, S.W.1, England.
Please send me list of suppliers of belting made with Du Pont neoprene.
8/60 G.B. 21 765 01

NAME .....

POSITION ..... COMPANY .....

ADDRESS .....

CITY ..... COUNTRY .....

NOTES of the WEEK

Science and Man

THE one hundred and twenty-second annual meeting of the British Association for the Advancement of Science starts in Cardiff at the end of the month. It is invariably an occasion of immense interest and importance, covering with its 15 sections almost the whole field of science. Six addresses will deal with various aspects of polymer science. In one of these, Dr E. Hunter, who is research director of I.C.I.'s Alkali Division, will give an account of the chemist's part in establishing the full-scale manufacture of polythene. The preparation and properties of some new stereo-regular polymers containing polar groups will be described in an address by Mr P. R. Thomas, British Nylon Spinners. Dr T. T. Jones, Monsanto Chemicals Ltd., in his address on the graft polymerization of styrene on to pre-irradiated polythene, describes how trapped radicals formed by the irradiation of polythene can initiate the polymerization of styrene. Mr J. L. B. Benton, British Geon Ltd., is to talk on modern aspects of polymer structure and its relation to properties, and Professor A. G. Evans on the mechanism of polymerization reactions catalyzed by ionic catalysts. A different field will be dealt with by Mr P. J. March, Shell Chemical Co. Ltd., whose paper is entitled 'Commercial Development of a New Product—Epoxide Resins.' Other papers in this and allied fields include one by Dr J. Bell, I.C.I. Nobel Division, on the industrial applications of silicones; by Professor K. A. Andrianov, Moscow Energetics Institute, on the formation reactions of high molecular polyorganosiloxanes, and by Dr R. A. Gregory, Midland Silicones Ltd., on the commercial production of silicones.

The presidential address at the inaugural meeting will be given by Sir George Thomson, F.R.S., Master of Corpus Christi College, Cambridge, who is to discuss 'The Two Aspects of Science.' He will deal, as the British Association says, with what may well be the life and death question for this generation —what science has done to man.

The Lay and The Young

IN an effort to make natural science and the scientific method understood and acceptable to the public as a part of daily life, the British Association is providing a number of items of lay interest, in particular the Kelvin, Darwin and Lister Lectures which were introduced last year. There is also a Science in Schools Exhibition which forms part of a special programme for young people. This programme includes a lecture by Professor C. E. H. Bawn on 'Plastics and Fibres' which will describe the particular kinds of chemical substances which can be synthesized into plastics, rubbers and fibres. A programme of this type is clearly of immense value not only to young people, and to those not intending to study science to advanced level, but also to members of the general public.

A comprehensive, one might almost say formidable, list of excursions includes planned visits to a number of factories and plants in the area. Among those open, on specified dates, to members attending the meeting are British Nylon Spinners, Midland Silicones plant at Barry, I.C.I.'s chemical plant at Dowlais, Monsanto's Newport plant and the research and development laboratories of the Plastics Group of the Distillers Company.

Research Increasing

THE grant-aided Research Associations, which last year reached a total number of 50 for the first time, are keeping pace with the increasing research effort in industry generally. Income from industry and Government rose from £5.1m. in 1955 to £7.3m. in 1959, of which the Department of Scientific and Industrial Research contributed £1.7m. last year. The Industrial Grants Committee of the Council for Scientific and Industrial Research, in their report *Research for Industry* 1959,* published on August 10, state that they expect DSIR contributions to go on rising. All types of activity, basic, applied and sponsored research, and development, information and advice, are benefiting from this expansion.

The report includes an article by Dr J. Thomson, Director of the British Scientific Instrument Research Association, on the progress of research on instrumentation and automatic control in industry. The author points out that in this field, more than any other, the various research associations have made a successful contribution to productivity alongside that of individual industrial firms. 'There can be no doubt whatever,' he writes, 'that the proper use of industrial instruments and control systems offers great opportunities for the future. In a country like Britain, where the value of exports in relation to imports largely determines the standard of living, instrumentation and automatic control must be used to the full.'

Research for Industry also contains brief descriptions of the work of each of the research associations and a fuller record of achievements of the 12 associations whose grants came up for renewal during 1959.

* *Published for DSIR by HMSO price* 8*s.* 0*d.* (\$1.44 *USA*) *by post* 8*s.* 7*d.*

NEWS *Briefs*

SINGAPORE SHIPMENTS DOWN — NEW ZEALAND TARIFF MOVES — ALTONA CONTRACT AWARDED MONTECATINI UREA PROJECT IN PORTUGAL

●**Singapore**—Preliminary total ocean shipments of rubber during July amounted to 82,560 tons, according to a cable received by the Trade Commissioner for Singapore in the UK. This compares with 88,122 tons exported in June and 108,134 tons exported in July last year.

●**Thailand** — The Government has approved a bill to place a small tax on rubber exports to provide a fund which will be used to assist replanting.

●**France** — The duty on styrene monomer has been reintroduced. Provisionally it is at a minimum rate of 14% *ad valorem*. Quantities shipped before the reintroduction of the duty will be excluded from payments, if they are for immediate use.

●**United Kingdom** — The Board of Trade is considering an application for the removal of the import duty on staple fibre of copolymerized vinyl chloride and vinyl acetate.

●**Greece** — Restrictions have been imposed on the import of a number of basic items, including car tyres and tubes. It is expected that, in order to save foreign exchange, permits will be granted to countries with which Greece is linked by bilateral agreements.

●**South Vietnam** — On the basis of a survey made among the large plantations it has been estimated that the area planted or replanted from 1956 to 1958 was about 7,500 hectares. This is 2% below the annual rejuvenation rate required to maintain production at a uniform level. Exports in the first quarter totalled about 18,500 tons.

●**Australia** — World Services and Construction Pty., a subsidiary of Werkspoor, of Amsterdam, has been awarded a contract for the mechanical installation of the new PVC plant for B. F. Goodrich-CSR Chemicals at Altona, Victoria. Distillers has a 40% interest in CSR.

●**United States** — Beaunit Mills Inc. has announced that its new reduced prices for rayon tyre yarn will remain effective beyond August. Industrial Rayon Corporation is following suit. Early last week producers of high strength rayon tyre cord officially cut prices more than 4% but only for orders placed this month.

●**Greece** — The Dow polystyrene plant will be sited in the Larissa area. It will cost $5.7m. and capacity will be 12,000 tons a year.

●**Argentine** — Casein production is improving, particularly along the warmer edge of the dairy belt. Shipments reported during the week totalled 983 tons, including 594 to USA and 150 to Western Germany.

●**Formosa** — Production capacity of the Formosa Plastics Corp. is being increased. Production of PVC resin is being expanded from 300 to 1,200 tons per month. The company operates a subsidiary which fabricates a wide range of PVC articles.

●**Portugal** — Montecatini are to build a urea plant at Lavradio. It will produce 40,000 tons a year by the Fauser - Montecatini process. The project will be a joint one between the Italian firm and Uniao Fabril do Azoto of Lisbon.

●**United Kingdom**—Storey's of Lancaster have announced that they are to hold the first exhibition for members of the public to be devoted entirely to the use of plastics in the modern home. The exhibition 'Living With Plastics' will be opened on August 22 by C. H. Glassey, president of the British Plastics Federation, at the Tea Centre, London. The exhibition will run until September 22.

●**New Zealand** — Changes in customs tariffs are reported. They are said to give New Zealand plastics and rubber manufacturing firms 'a considerable measure of protection.'

●**India**—India's rubber output during the year ended on April 30 1960 totalled 24,000 tons and production for the year 1960-61 was estimated at 26,000 tons, Mr M. K. Kuriakose, chairman of the Kerala Planters Association, told a general meeting of the Association in Kerala. India's rubber requirements were expanding very quickly, he added, and if the country was to become self-sufficient by 1975, nearly 450,000 acres of land would have to be brought under rubber cultivation during the Third Five Year Plan.

'So when he told me I'd never get another order from him as long as he was the buyer, I merely smiled in a condescending manner, said I deeply regretted that he felt obliged to sever the long and hitherto unblemished relationship with a rubber company I was proud to represent, stood up and bashed him over the head with my brief case.'—497

GIVE

Press a rubber cushion. It gives; adapts itself to take varying pressures. A Technical Service should do much the same thing. I.S.R., the makers of Intol SB Rubbers, realize that no two rubber users have precisely the same problem. They provide a service that's versatile. The kind of Technical Service that rubber users want.

I.S.R. supply the relevant facts, clearly assembled, accurately presented: and confidentially handled. Add to this the fact that when you buy INTOL SB Rubbers you know the price will remain stable, and you understand why people are saying "You know where you are with I.S.R."

INTOL SB Rubbers are now produced in a range of eight grades of solid rubber and four latices. Please write for details.

INTOL Synthetic Rubber

stable price — consistent quality — assured delivery — technical service

The International Synthetic Rubber Company Ltd.
Southampton · Telephone: Blackfield 3141 · Cables: INTOL HYTHE
London · Telephone: Langham 0711 · Cables: INTOLRUB LONDON
Manchester · Telephone: Pyramid 1241 · Cables: INTOL MANCHESTER

Latex Installation Expanded

CAPACITY AT TILBURY NOW 700,000 GALLONS

THE latex installation of W. Symington and Son Ltd. at Tilbury Docks has been enlarged to cater for increases in latex consumption. The unit, which is the only one in the South of England designed specially for latex, now has a maximum storage capacity of 700,000 gallons. It is understood that land is available for further extensions.

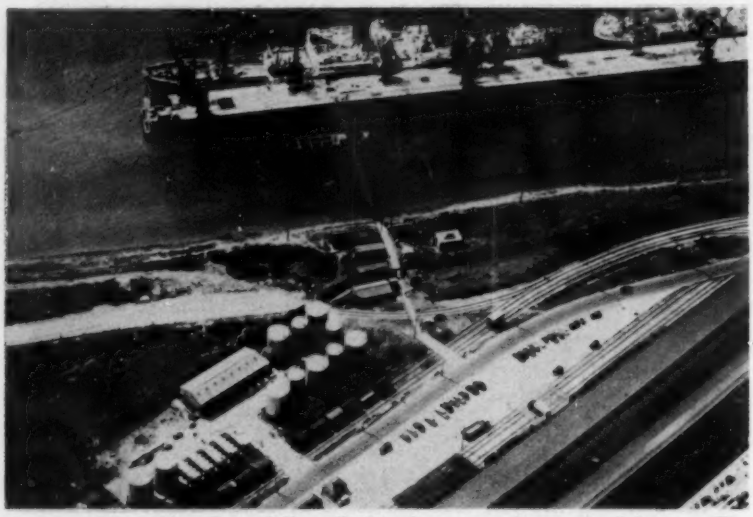
The tanks, which are of varying size to give flexibility in importing and storing, are sited opposite the Port of London Authority's cargo jetty, where ocean-going ships can be berthed at any state of the tide without having to enter the main dock system—an advantage for shipping companies for whom a delay of a few hours is often a serious matter.

Permanent Pipeline

Latex is carried by a permanent pipeline direct from the ships to the storage tanks without intermediate handling.

Most of the latex is finally delivered to consumers by road in tankers carrying 3,000 or 1,500 gallons, but there are ample facilities for filling and warehousing latex in drums for smaller users or for re-export.

A re-circulating device makes sure that the stored latex is constantly agitated to prevent creaming.



Antenor **of the Blue Funnel line discharging a consignment of latex. The latex is pumped straight from the ship to the storage tanks at the rate of 100 tons an hour**

The installation was opened almost exactly five years ago, and its capacity then was rated at 365,000 gallons.

US Rubber Wage Agreement

The US Rubber Company and the United Rubber Workers of America have reached agreement on a pact providing for wage increases of 9½ cents per hour for some 22,800 workers in eight plants.

The International Study Group, in the July issue of its rubber statistical bulletin, has revised the figure for world synthetic rubber stocks at the end of April (see bulletin of July 5) to 335,000 tons, from 332,500 given previously.

CHEAPER NEOPRENE FROM UK

The price of Neoprene Type W has been substantially reduced. This applies to neoprene produced at the Maydown Works, near Londonderry, of the Du Pont Company (United Kingdom) Ltd. Effective from August 2, the new price of Maydown-made Neoprene Type W is 38½d. per lb., delivered. Previous cost was 42⅞d. per lb. The reduction applies only to Neoprene Type W produced at Maydown; the price of all types of neoprene producted in the United States remains unchanged. Tests have shown that Maydown neoprene can be used interchangeably with Neoprene Type W of US manufacture in all processes and products. Other neoprene dry types and neoprene latex types will be produced at the Maydown Works and price reductions of these will be announced as they become available for delivery.

Ceylon Increase Duty

The Ceylon Government is seeking parliamentary approval for increases in export duty amounting to 18c. per lb. on rubber. The total export duty is now 38c. per lb.

The duty of 20c., which was ruling in July 1959, was increased by 8c. in July and a further 10c. in September, but Parliament was dissolved before it sanctioned the increases. The Government temporarily regularized the increases by levying them in the form of a licence fee of 18c. per lb. in addition to the normal 20c. duty.

Rubber interests have submitted a sliding scale of duty to the Government which they feel would be both more equitable by affording automatic changes in duty and soon enough to provide relief in the event of price declines.

Vitafoam in Africa

As previously reported, Vitafoam Ltd. have become associated with Perman-Air Rubber Co. (Pty.) Ltd. of Bulawayo, Southern Rhodesia, latex foam and rubberized hair manufacturers.

At the conclusion of the negotiations, Vitafoam expressed confidence that with a plant of their own design they would enable Perman-Air to meet the demand for latex foam cushions and mattresses in Rhodesia and Nyasaland.

Norman Grimshaw, chairman of Vitafoam, has emphasized that the local board of directors will have full powers in Rhodesia. He has joined the Perman-Air Board, as have three other Vitafoam directors.

The Perman-Air board members will be L. G. Bernstein (chairman), J. Geras (managing director), B. Fisher (sales director) and R. S. Harris.

Investigation

The Board of Trade have appointed M. J. Morris, Q.C., and Duncan McKellar, a chartered accountant, as inspectors to investigate the affairs of Selangor United Rubber Estates Ltd., Kali Glagah Rubber Company Ltd., and Moccasin Shoemakers Ltd.

PTFE Coated Glass Fabrics

NEW RANGE FOR BELTING AND ELECTRICAL APPLICATIONS

FOTHERGILL and Harvey are now producing a completely new range of PTFE coated Tyglas fabrics and yarns.

Known as 'Tygaflor,' the range embraces two types of coated fabric—Types A and L—coated yarns used for the braided surround of wires and cables, and an additional range of yarns for use as sewing threads on heat and chemical resistant fabrics.

The coated fabrics are made by applying a smooth, uniform and continuous coating of polytetrafluorethylene to woven glass fabrics, which are then slit into tapes of varying width, or left in sheet form depending on their ultimate application.

Type A is used in electrical applications as an insulant and elsewhere for non-stick surfaces on, for example, heat sealing machines, laminating platens, chutes, hoppers. It is also used as a gasket material and for lining low friction, non-lubricated bearings.

Type L is similar to A grade but it has been specially treated to increase tear resistance and flexibility, since the primary application for these fabrics is expected to be conveyor belting.

Resists Adhesion

'Tygaflor' has a low dielectric constant of 2.6 in combination with ing temperature range is from a high dielectric strength: it can withstand up to 700 volts per mil short time. The material is completely inert to all chemicals, acids, solvents, and fuels, with the exception of molten alkali metals, fluorine and chlorine trifluoride. The work—100°C. to 250°C. Other important properties are said to include a high resistance to abrasion, colour fastness and a marked ability to resist adhesion.

Fothergill and Harvey say that they expect 'Tygaflor' to 'obviate problems previously encountered in the materials handling field.' Belting made from it has solved production difficulties encountered where heat or sticky surfaces are involved, particularly in the food and confectionery industries.

The use of a single-ply belt for a test period is claimed to have resulted in less stopped time, fewer replacement belts, and a marked decrease in the number of loose seals at junctions. The belts are dimensionally stable and the use of anti-blocking or release agents is unnecessary wherever sticky, resinous, hot, or moist materials are transported. They have a safe working stress of 10lb. per in. of width on .010in. thick type, 5lb. on .005in. and 5lb. on .006in. belts.

Plant Lining Group

At the annual general meeting of the plant lining group of the Federation of British Rubber and Allied Manufacturers, A. E. Allcock (Dunlop) was elected chairman, and T. H. Brooke (Redferns (Bredbury) Ltd.), vice-chairman.

Sales Suspended

Sales of rubber from the UK stockpile have been suspended until September 1, the Board of Trade announced on August 10.

Japan May Impose Synthetic Duty

Japanese Government officials said on August 8 that import duties on synthetic rubber were being considered to protect the domestic synthetic rubber industry.

Spokesmen for the Trade and Finance Ministries said a 10 to 15% duty might be levied. Increased imports of low-priced synthetic rubber were harming the two domestic producers, the spokesmen said.

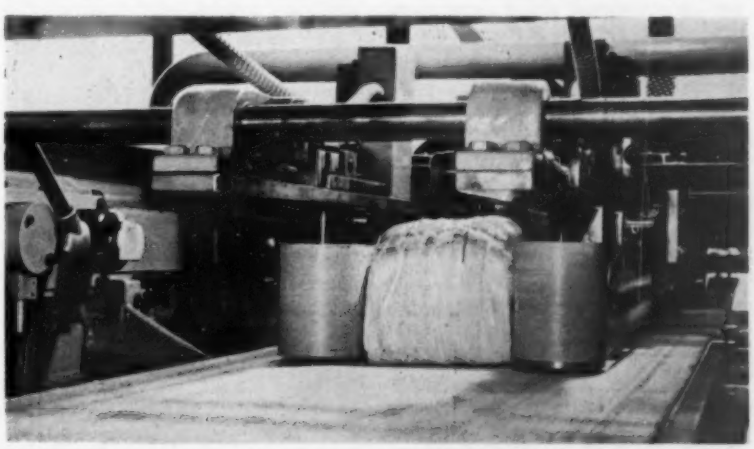
Imports now average about 5,000 tons monthly, enough to cover all synthetic needs of rubber manufacturers. Domestic output was 3,000 tons in June.

The Japan Rubber Manufacturers' Association said to impose duties on synthetic imports would be technically difficult and politically unwise. Other countries might retaliate by raising import duties on Japanese goods, especially rubber articles. The association went on to say that higher prices of synthetic rubber in Japan might encourage imports of crude rubber.

BPF Conference 1960

FOLLOWING the successful conferences held at Torquay in 1956 and 1958, the British Plastics Federation has arranged a third conference this year at the Grand Hotel, Scarborough. It will be held between October 5 and 7.

The business sessions take place on the mornings of Thursday October 6, and Friday October 7, when the papers that will be read are 'Planning and Budgeting in the Plastics Industry' (R. E. J. Gillett, British Resin Products). 'The Commercial Prospects of the Plastics Industry' (J. Morrish, Thermo-Plastics Ltd.). 'The Value of Research to the Plastics Industry' (H. C. Raine, I.C.I.). 'Recent Technical Developments in Thermoplastics' (J. Hartley and S. Squires, Shell Chemical). 'The Outer Seven' (Dr T. Ward, I.C.I.). 'Automation and Work Study' (F. E. Mills, BIP Eng. Ltd.).



Two PTFE/glass belts, 48in. x 4in., are used on this automatic bread-slicing and polythene-wrapping machine manufactured by the Forgrove Machinery Co. Ltd., Leeds, a member of the Baker Perkins Group. The package ends are sealed by heat transmitted through the belt. Release properties, and the ability to transmit and resist heat, are factors that went into the choice of PTFE/glass belts for this application

Plastics in the Netherlands

PREPARATIONS FOR 1960 MACROPLASTIC EXHIBITION

AT the macroPlastic Exhibition to be held in Utrecht from October 19-26, exhibitors from the Dutch plastics industry will be joined by many others from all over the world. The organization pattern of the exhibition is new to Europe and one special hall will be divided into about twenty sections each dealing with specific branches of the industry, such as building, technical appliances and packaging. A brief review of the position of plastics in Holland is given for the benefit of prospective visitors.

Production Rising

Production of plastics in Holland has increased nearly threefold in the last five years, rising from 22,000 tons in 1954 to 59,000 tons in 1959. A wide range of products is manufactured, consisting mainly of alkyds, PVC, polythene, aminoplastics, phenolics, polyvinylacetate and polyamides. Production figures for each group are not available but estimates of total consumption give a figure of 84,100 tons, a breakdown of which is shown in Table 1.

The increasing production is mainly due to the establishment of a petrochemical industry and to the expansion of the chemical factories connected with the coalmining industry. All the raw materials for production of the plastics are now manufactured in Holland. The petrochemical industry is producing PVC and epoxy resins, while the coal industry is making polythene, and a great many basic chemicals such as phenol, caprolactam, urea, phthalic acid and phthalic anhydride.

TABLE 1

1959 CONSUMPTION ESTIMATES	(TONS)
Aminoplasts	11,000
Phenolics	9,000
Paint resins	20,000
Polyesters	1,200
PVC	18,000
Polyvinylacetate	4,000
Other polyvinyls	300
Polyethylene	8,000
Polystyrene	3,600
Polyacrylics	2,000
Polyamides	2,000
Cellulosics and others	5,000
Total	84,100

A review follows of the individual plastics arranged in order of volume of consumption.

Alkyds and PVC

The producers of alkyds are closely connected with the Dutch paint industry. Holland is one of the main paint exporting countries of the world and the paint manufacturers realized that if they were to maintain their markets they must be up to date in producing newer types of paints and lacquers. Production figures are not available, but estimates call for 20,000 tons. Exports of alkyds rose from 4,100 tons in 1954 to 10,000 tons in 1959.

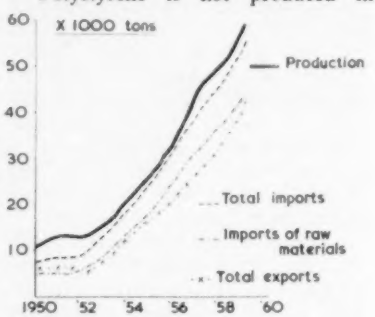
Of the thermoplastics, PVC is by far the most widely used material. Total consumption in 1959 was 18,000 tons, of which some 12,000 tons came from abroad, mainly West Germany, Belgium, UK, Japan and France. Home production capacity is 10,000 tons and is largely of material for manufacture of piping. Considerable research effort has been expended in this direction and a large export trade exists.

Other important outlets for PVC include floor coverings, artificial leather and film. A wide variety of products based on PVC other than the normal plasticized material are used for flooring, such as asbestos/vinyl combinations. Artificial leather on a PVC base is used in the coach work industry, particularly for bus seats where a combination of PVC and polyurethane foam is used. Extended research has been carried out on the agricultural uses of PVC films as coverings.

Polythene and Polystyrene

Early in 1959 home production of polythene started with a capacity of 8,000 tons a year. Applications and markets for this material are increasing so rapidly, both at home and abroad, that expansion has already become necessary and, according to the producer (State Mines) capacity will be increased to 24,000 tons. Consumption of polythene in Holland was 8,000 tons in 1959 and is expected to reach 10,000 tons in 1960. Main outlets are for films used in packaging and in engineering applications such as the building of dykes. Household articles and toys are also made by numerous companies.

Polystyrene is not produced in Holland, and 3,600 tons were imported in 1959. This was used mainly for electronic components, foams and packaging applications. The latter are becoming rapidly more important.

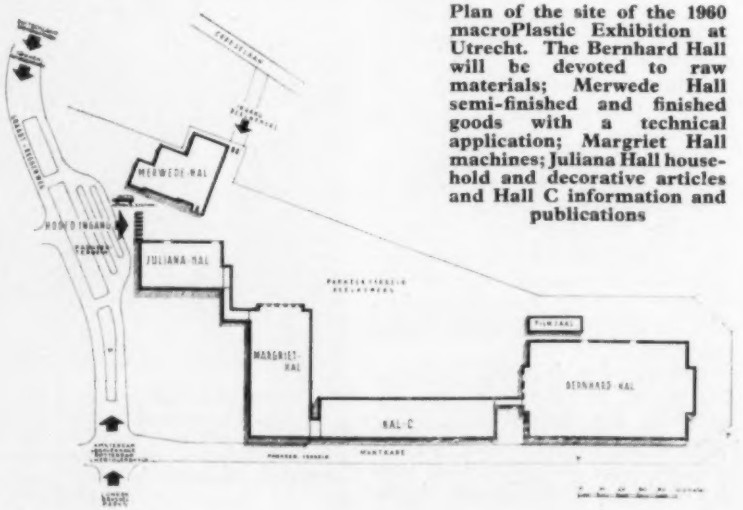


Production, and export - import picture in the Netherlands of plastics over the last decade

Polyvinylacetate and Polyamides

Polyvinylacetate is produced by several companies, although there is only one producer of the monomer. Total consumption is of the order of 4,000 tons a year. Main outlets are adhesives and paints.

Polyamides are produced mainly for the manufacture of synthetic fibres but some is used for moulding



Plan of the site of the 1960 macroPlastic Exhibition at Utrecht. The Bernhard Hall will be devoted to raw materials; Merwede Hall semi-finished and finished goods with a technical application; Margriet Hall machines; Juliana Hall household and decorative articles and Hall C information and publications

powder. These are used for such items as gear wheels, blowers for air-conditioning units in ships, and housings for electrical household equipment such as vacuum cleaners. In Holland PVC pipe is extensively used in water installations and polyamide coupling pieces have been developed.

Thermosets

Phenolic moulding powders are made by several companies and there is some export. Phenolic resins are also produced and find applications in adhesives, laminates and chipboard. Total consumption of both resins and powder is estimated at approximately 9,000 tons.

Urea formaldehyde and melamine formaldehyde moulding powders have to be imported. Total imports were about 1,400 tons in 1959 of which some 35% was melamine.

Total consumption of all resins and moulding powders is estimated at 11,000 tons a year, a small proportion of the resin production being exported.

Common Market

In the Common Market Holland has a production share of about 4.5% as can be seen from Table 3. In spite of big expansion in other Common Market countries the Dutch plastics industry can maintain its position. Close relations exist between Holland and the other Common Market countries regarding foreign trade. As shown by the figures in Table 2 over 60% of plastics imported into Holland comes from the Common Market and this figure has increased steadily over the last few years. West Germany was mainly responsible for this increase at the expense of the UK which lost nearly 50% of its market.

TABLE 2
DUTCH PLASTIC IMPORT SOURCES

	1956	1958	1959
W. Germany ..	30	34	38
Belgium/Luxembourg	21	24	19
France	5	1	4
Italy	—	2	3
Total Common Market ..	56	61	64
U.K.	25	15	13
Scandinavia ..	4	5	5
North America ..	13	16	14
Rest	2	3	4

This trend seems likely to continue in the future and it is expected that in particular more polystyrene and polythene will be imported from Germany and Italy as more production capacity becomes available in these countries. It is also probable that USA exports to Holland will decrease, and this is already demonstrated by the figures for polystyrene where a shift in favour of Italy at the expense of the USA has taken place.

TABLE 3
COMMON MARKET PRODUCTION
(1,000 TONS)

	1954		1959	
	abs.	%	abs.	%
W. Germany ..	339	63.2	795	60.8
France ..	85	15.8	195	14.9
Italy	77	14.3	210	16.0
Belgium/Lux. ..	14	2.6	50	3.8
Netherlands ..	22	4.1	59	4.5
Total	537		1,309	

Siped Tread

Tyresoles Ltd. are to introduce a new siped tread at the Motor Show at Earls Court in October. It is contemporary in design, with multiple sipes in all tread ribs, giving maximum angled edges to grip the road. The continuous ribs, with irregular profile and multiple sipes, are said to give silent running with maximum grip, and cornering without squeal.

Appearance of the tread and sidewall is said to be as good as the best of new tyres, and it will be available in most car tyre sizes.

Some changes in the Strategic Goods Amendment Order (1960) include the imposition of control on pipes covered with PTFE. The changes come into force on August 22.

Metal Box Launch Diosacks

HEAVY DUTY POLYTHENE PACKAGING

DIOSACKS—heavy duty sacks of Diothene polythene film—have now been launched by the Plastics Group of Metal Box. The company says that they will provide special advantages for the bulk packing of granular and powdered products. The first user is Monsanto Chemicals Ltd., who supplied the polythene from which the film is made.

The sacks are made from film up to 1,000 gauge (0.010in. thick), and are closed by heat sealing. They can be printed in up to two colours. The first to be offered are of 22in. width and of varying heights according to requirements.

They are said to have high moisture resistance, which makes them valuable for packing hygroscopic products. They are weather resistant, are not affected by extremes of temperature, are not penetrated by water, and do not get soggy when rained upon.

Normally, the sacks are transparent. This is an advantage when the colour of the contents has to be instantly and accurately identified, and it helps to simplify storage and warehousing problems. For large quantities, sacks can also be produced in pigmented film.

Metal Box expect these sacks to be used for many products in the chemical, agricultural and food industries. Among these are powdered and granular chemicals, especially those products where protection against moisture is important. Plastics moulding materials, for example, are being packed in polythene sacks in America.

IRI News

At a meeting of the Council of the Institution of the Rubber Industry held in London on July 19, Dr W. J. S. Naunton, Dr S. S. Pickles and Dr H. P. Stevens were elected life vice-presidents J. H. Cooper and L. Harrison were admitted to the associateship, and Dr H. A. Daynes and Dr D. Parkinson were elected to long service membership.

Humberside Section

The petition seeking approval for the establishment of the new IRI Humberside Section, and draft sectional rules submitted by the provisional committee, were received and accepted. The allotted area of the new section is bounded by the East Riding of Yorkshire boundary, extending through York, Selby, Doncaster, Retford, Lincoln and Skegness.

Plastics in the Netherlands

PREPARATIONS FOR 1960 MACROPLASTIC EXHIBITION

AT the macroPlastic Exhibition to be held in Utrecht from October 19-26, exhibitors from the Dutch plastics industry will be joined by many others from all over the world. The organization pattern of the exhibition is new to Europe and one special hall will be divided into about twenty sections each dealing with specific branches of the industry, such as building, technical appliances and packaging. A brief review of the position of plastics in Holland is given for the benefit of prospective visitors.

Production Rising

Production of plastics in Holland has increased nearly threefold in the last five years, rising from 22,000 tons in 1954 to 59,000 tons in 1959. A wide range of products is manufactured, consisting mainly of alkyds, PVC, polythene, aminoplastics, phenolics, polyvinylacetate and polyamides. Production figures for each group are not available but estimates of total consumption give a figure of 84,100 tons, a breakdown of which is shown in Table 1.

The increasing production is mainly due to the establishment of a petrochemical industry and to the expansion of the chemical factories connected with the coalmining industry. All the raw materials for production of the plastics are now manufactured in Holland. The petrochemical industry is producing PVC and epoxy resins, while the coal industry is making polythene, and a great many basic chemicals such as phenol, caprolactam, urea, phthalic acid and phthalic anhydride.

TABLE 1

1959 CONSUMPTION ESTIMATES	(TONS)
Aminoplasts	11,000
Phenolics	9,000
Paint resins	20,000
Polyesters	1,200
PVC	18,000
Polyvinylacetate	4,000
Other polyvinyls	300
Polyethylene	8,000
Polystyrene	3,600
Polyacrylics	2,000
Polyamides	2,000
Cellulosics and others	5,000
Total	84,100

A review follows of the individual plastics arranged in order of volume of consumption.

Alkyds and PVC

The producers of alkyds are closely connected with the Dutch paint industry. Holland is one of the main paint exporting countries of the world and the paint manufacturers realized that if they were to maintain their markets they must be up to date in producing newer types of paints and lacquers. Production figures are not available, but estimates call for 20,000 tons. Exports of alkyds rose from 4,100 tons in 1954 to 10,000 tons in 1959.

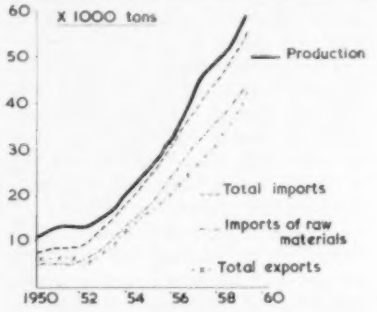
Of the thermoplastics, PVC is by far the most widely used material. Total consumption in 1959 was 18,000 tons, of which some 12,000 tons came from abroad, mainly West Germany, Belgium, UK, Japan and France. Home production capacity is 10,000 tons and is largely of material for manufacture of piping. Considerable research effort has been expended in this direction and a large export trade exists.

Other important outlets for PVC include floor coverings, artificial leather and film. A wide variety of products based on PVC other than the normal plasticized material are used for flooring, such as asbestos/vinyl combinations. Artificial leather on a PVC base is used in the coach work industry, particularly for bus seats where a combination of PVC and polyurethane foam is used. Extended research has been carried out on the agricultural uses of PVC films as coverings.

Polythene and Polystyrene

Early in 1959 home production of polythene started with a capacity of 8,000 tons a year. Applications and markets for this material are increasing so rapidly, both at home and abroad, that expansion has already become necessary and, according to the producer (State Mines) capacity will be increased to 24,000 tons. Consumption of polythene in Holland was 8,000 tons in 1959 and is expected to reach 10,000 tons in 1960. Main outlets are for films used in packaging and in engineering applications such as the building of dykes. Household articles and toys are also made by numerous companies.

Polystyrene is not produced in Holland, and 3,600 tons were imported in 1959. This was used mainly for electronic components, foams and packaging applications. The latter are becoming rapidly more important.

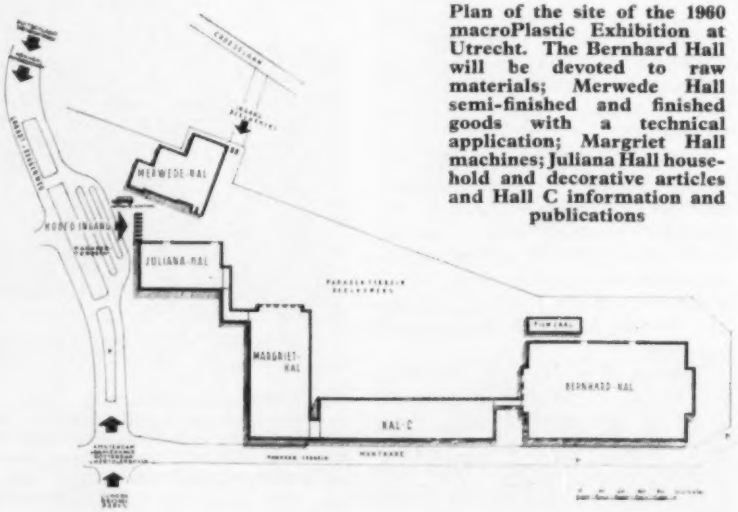


Production, and export - import picture in the Netherlands of plastics over the last decade

Polyvinylacetate and Polyamides

Polyvinylacetate is produced by several companies, although there is only one producer of the monomer. Total consumption is of the order of 4,000 tons a year. Main outlets are adhesives and paints.

Polyamides are produced mainly for the manufacture of synthetic fibres but some is used for moulding



Plan of the site of the 1960 macroPlastic Exhibition at Utrecht. The Bernhard Hall will be devoted to raw materials; Merwede Hall semi-finished and finished goods with a technical application; Margriet Hall machines; Juliana Hall household and decorative articles and Hall C information and publications

powder. These are used for such items as gear wheels, blowers for air-conditioning units in ships, and housings for electrical household equipment such as vacuum cleaners. In Holland PVC pipe is extensively used in water installations and polyamide coupling pieces have been developed.

Thermosets

Phenolic moulding powders are made by several companies and there is some export. Phenolic resins are also produced and find applications in adhesives, laminates and chipboard. Total consumption of both resins and powder is estimated at approximately 9,000 tons.

Urea formaldehyde and melamine formaldehyde moulding powders have to be imported. Total imports were about 1,400 tons in 1959 of which some 35% was melamine.

Total consumption of all resins and moulding powders is estimated at 11,000 tons a year, a small proportion of the resin production being exported.

Common Market

In the Common Market Holland has a production share of about 4.5% as can be seen from Table 3. In spite of big expansion in other Common Market countries the Dutch plastics industry can maintain its position. Close relations exist between Holland and the other Common Market countries regarding foreign trade. As shown by the figures in Table 2 over 60% of plastics imported into Holland comes from the Common Market and this figure has increased steadily over the last few years. West Germany was mainly responsible for this increase at the expense of the UK which lost nearly 50% of its market.

TABLE 2
DUTCH PLASTIC IMPORT SOURCES

	1956	1958	1959
W. Germany ..	30	34	38
Belgium/Luxembourg	21	24	19
France	5	1	4
Italy	—	2	3
Total Common Market ..	56	61	64
U.K.	25	15	13
Scandinavia ..	4	5	5
North America ..	13	16	14
Rest	2	3	4

This trend seems likely to continue in the future and it is expected that in particular more polystyrene and polythene will be imported from Germany and Italy as more production capacity becomes available in these countries. It is also probable that USA exports to Holland will decrease, and this is already demonstrated by the figures for polystyrene where a shift in favour of Italy at the expense of the USA has taken place.

TABLE 3
COMMON MARKET PRODUCTION
(1,000 TONS)

	1954		1959	
	abs.	%	abs.	%
W. Germany ..	339	63.2	795	60.8
France ..	85	15.8	195	14.9
Italy	77	14.3	210	16.0
Belgium/Lux. ..	14	2.6	50	3.8
Netherlands ..	22	4.1	59	4.5
Total	537		1,309	

Siped Tread

Tyresoles Ltd. are to introduce a new siped tread at the Motor Show at Earls Court in October. It is contemporary in design, with multiple sipes in all tread ribs, giving maximum angled edges to grip the road. The continuous ribs, with irregular profile and multiple sipes, are said to give silent running with maximum grip, and cornering without squeal.

Appearance of the tread and sidewall is said to be as good as the best of new tyres, and it will be available in most car tyre sizes.

Some changes in the Strategic Goods Amendment Order (1960) include the imposition of control on pipes covered with PTFE. The changes come into force on August 22.

Metal Box Launch Diosacks

HEAVY DUTY POLYTHENE PACKAGING

DIOSACKS—heavy duty sacks of Diothene polythene film—have now been launched by the Plastics Group of Metal Box. The company says that they will provide special advantages for the bulk packing of granular and powdered products. The first user is Monsanto Chemicals Ltd., who supplied the polythene from which the film is made.

The sacks are made from film up to 1,000 gauge (0.010in. thick), and are closed by heat sealing. They can be printed in up to two colours. The first to be offered are of 22in. width and of varying heights according to requirements.

They are said to have high moisture resistance, which makes them valuable for packing hygroscopic products. They are weather resistant, are not affected by extremes of temperature, are not penetrated by water, and do not get soggy when rained upon.

Normally, the sacks are transparent. This is an advantage when the colour of the contents has to be instantly and accurately identified, and it helps to simplify storage and warehousing problems. For large quantities, sacks can also be produced in pigmented film.

Metal Box expect these sacks to be used for many products in the chemical, agricultural and food industries. Among these are powdered and granular chemicals, especially those products where protection against moisture is important. Plastics moulding materials, for example, are being packed in polythene sacks in America.

IRI News

At a meeting of the Council of the Institution of the Rubber Industry held in London on July 19, Dr W. J. S. Naunton, Dr S. S. Pickles and Dr H. P. Stevens were elected life vice-presidents J. H. Cooper and L. Harrison were admitted to the associateship, and Dr H. A. Daynes and Dr D. Parkinson were elected to long service membership.

Humberside Section

The petition seeking approval for the establishment of the new IRI Humberside Section, and draft sectional rules submitted by the provisional committee, were received and accepted. The allotted area of the new section is bounded by the East Riding of Yorkshire boundary, extending through York, Selby, Doncaster, Retford, Lincoln and Skegness.

Plastics at Work

THERMOPLASTICS FOR HANDLING CORROSIVES

By DAVID ALEXANDER

IN the last few years much experience has been gained in the use of thermoplastics for handling corrosive gases and liquors and the chemical engineer no longer considers plastics as a last minute expedient.

Thermoplastics are used widely, in one form or another, in a large range of industries covering chemical manufacture, plating, water supply, electrical equipment and handling of salt and deionized waters, and it is intended to consider the materials and techniques for processing them for these purposes.

Materials

The thermoplastic range consists of polythene, polystyrene, polyvinylchloride, polymethylmethacrylate, polypropylene, nylon, polytetrafluoroethylene, and polycarbonate. For the purposes of this article and from the point of view of practical usage the materials to be considered are polythene, both low and high density, polyvinylchloride, polytetrafluoroethylene and polypropylene. From the plastic engineer's or chemical engineer's point of view the great value of plastics is their very wide range of chemical resistance which varies from material to material. Of the thermoplastic materials used the most commonly to be considered are PVC and polythene. Tables at the end of this article show the very wide resistance range that these two materials offer and from which the best suited material can be selected. Also it is advisable to check on temperature conditions as one of the weaknesses of thermoplastics is that above approximately 60°C. both polythene and PVC are not under normal conditions satisfactory. This range can be raised to between 80 and 100°C. by the use of high density types of polythene and more recently further progress has been made in increasing this temperature range by the use of polypropylene which can handle these various chemicals safely up to between 130 and 150°C. which is a considerable step forward and will undoubtedly enlarge the possible opportunities for the use of plastics in the chemical and related industries. Polytetrafluoroethylene (PTFE) is very expensive and cannot normally be considered except where the other materials are not satisfactory. It can, for instance, handle acids up to 250°C. Another factor to take into account in the use of plastics is that the coefficient of expansion can be up to nine times that of metals (polythene 0.02%, PVC 0.08, steel 0.001). The very light weight of plastics is also worth considering as it can allow their use and erection in various structures where metals would be most difficult and expensive to install. For example, lead weighs approximately 700lb./cu. ft., steel 490lb./cu. ft., whereas PVC may weigh about 90lb./cu. ft. and polythene approximately 56lb./cu. ft. Also to be taken into account is the low tensile strength of plastics: polythene can come down to approximately 1,800lb./sq. in. as compared with 2,200 for lead and 50,000 for steel.

However, there is no doubt that in certain applications plastics are proving considerably more satisfactory than the traditional metals previously used and in USA water pipelines are being installed at the rate of between 12 and 20m. ft. a year, in place of lead and copper. More recently PVC pipe has begun to be used in the UK for this purpose and now with the availability of the correct grades of non-toxic PVC this expansion is likely to be considerable in the next two or three years. Already the acceptance of PVC on the Continent has shown the very great potential for PVC pipeline systems. From the point of view of price per lb. plastics are generally more expensive than metals, but due to the low density, when equivalent lengths of piping are compared, the plastic pipe may well show savings.

There are also distinct advantages in the installation and maintenance of chemical plant. The material cost may well compare favourably with that of metals, the installation can be made with fewer men and without the use of heavy scaffolding and cranes. Maintenance is much reduced as plastic pipes need no painting and cleaning down, and the service life may be considerably longer than that of metal piping.

Techniques

However excellent the properties of thermoplastics may be they are of no value unless they can be coupled with the correct techniques in welding, machining, forming and bending. Fig. 1 shows a range of PVC fume extracting trunking and gives some idea of the size of plant which can be constructed in these materials. However, standards in the construction of plant and ducting from thermoplastics are frequently low, especially it has been found, when the plant has been constructed by the factory's own technicians. Some standards, in fact, for PVC and polythene plant are so low as to make the whole installation a danger to other personnel. What usually happens in these cases is that one of the works' staff is sent away for a two weeks' course in welding of plastics and then returns to the factory as the 'expert.' In the writer's experience it is not possible for a man to become really competent without supervision for very much longer periods. Many plastics fabrication and engineering companies with considerable experience are at variance as to the correct materials and techniques for particular applications and it is apparent that if chemical companies intend to undertake their own fabrication work the technicians concerned should be properly trained. It is one thing to develop an inch bore polythene bend but a completely different thing to develop a rigid PVC bend which is absolutely leak-proof such as that shown in Fig. 2. This is an 18in. bend constructed entirely from ¼in. PVC with ½in. flanges and shows one of the techniques used in developing such bends, each segment of which must be welded sufficiently strongly to take the stresses and strains involved.

Both polythene and PVC can be machined, guillotined, drilled and sawn. They can also be welded by a similar technique to that of metal welding using a welding torch but

P.V.C.-coated 'Terylene' flexible ventilation ducting in use at Parsonage Colliery, Leigh, Lancashire

'Terylene' for coated fabrics

Coated 'Terylene' fabrics are being produced in a variety of types and weights. They're tremendously strong. Selectively coated with natural or synthetic rubbers, plastics or resins, they have outstanding resistance to heat and chemicals and, more than any other kind of coated fabric, to sunlight and weathering. That means they last longer.

'TERYLENE' ICI Polyester Fibre

These fabrics are being put to an increasing number of uses in industry: life rafts, hatch tarpaulins and collapsible liquid containers are just three of them. Coated 'Terylene' is only one of the ways in which this all-British fibre is serving industry. For further information, write to the address below.

'Terylene' is the trademark for the polyester fibre made by IMPERIAL CHEMICAL INDUSTRIES LIMITED, FIBRES DIVISION, HOOKSTONE RD, HARROGATE, YORKS
T6611

Manosperse

for

LOWER MIXING TEMPERATURES

FASTER PROCESSING

LOWER EXTRUSION TEMPERATURE

LESS SCORCHING

use

MANOSPERSE 'A'

The outstanding processing aid for hard non-black mixes.

MANOSPERSE 'L'

For dispersion and processing problems in tough black stocks.

MANOSPERSE 'T'

Ideal for transparent or light coloured compounds.

HARDMAN & HOLDEN LIMITED

Manox House, Miles Platting, Manchester, 10

Tel: COLlyhurst 1551 (10 lines)

Telegrams: 'Oxide' Manchester

using, instead of a flame, compressed air, nitrogen or an inert gas.

Machining

The most important point to bear in mind with regard to machining of plastics is the build up of frictional heat during the operation. The tool must be very sharp, the feed and speed rates of the tool specially adjusted, and a coolant such as soapy water or an air blast should be used. It is also as well to remember that when the material cools it will shrink slightly and therefore it is not possible to machine to fine tolerances with either PVC or polythene, although polypropylene is better in this respect.

Sawing

The average cutting speed should be 7 to 8ft. a minute and although any ordinary saw will do, the ideal saw should be of 6 to 8 teeth per in. and hollow ground with a tungsten tipped tool.

If cutting is carried out by bandsaw then this should rotate at a band speed of 7,000ft. a minute and have 20 teeth to the inch, it being either single or ribbon set in order to give clearance and to cut down the tendency towards frictional heat build-up. Where possible it is recommended that an air jet is used in order to remove any swarf that might build up, the average feed rate in this case would depend on the thickness of the material and varies between 2 and 20ft. per minute.

Fig. 2.—Right-angle bend in 18-in. diameter pipe constructed from ¼in. thick PVC

Guillotining

This method of cutting is possible up to approximately ¼in. thick PVC and perhaps a ¼in. polythene. It is recommended, if possible, that the sheet is warmed to approximately 40 to 50°C. before the cutting takes place.

Drilling

It is possible to drill with ordinary standard drills although a flatter nose angle and an increased rake on the flutes is recommended in order to reduce a certain tendency to 'snatch.' It should be noted that if the depth of the holes drilled is greater than twice the drill diameter then in view of the possible build-up of swarf extra large fluted drills are recommended, otherwise it is necessary to withdraw the drill frequently and clean it. Should rapid drilling be required then soapy water or other coolant is recommended, care being taken at all times that overheating does not develop. It is also advisable not to drill the required item free but to bolt it to a base plate. For small holes the recommended speed is 4,000 to 6,000rpm, but if holes of ½in. diameter or greater are required then the speed should be reduced to 800rpm. The feed rate for large holes is 6in. a minute and somewhere between 2 and 3ft. a minute for small holes.

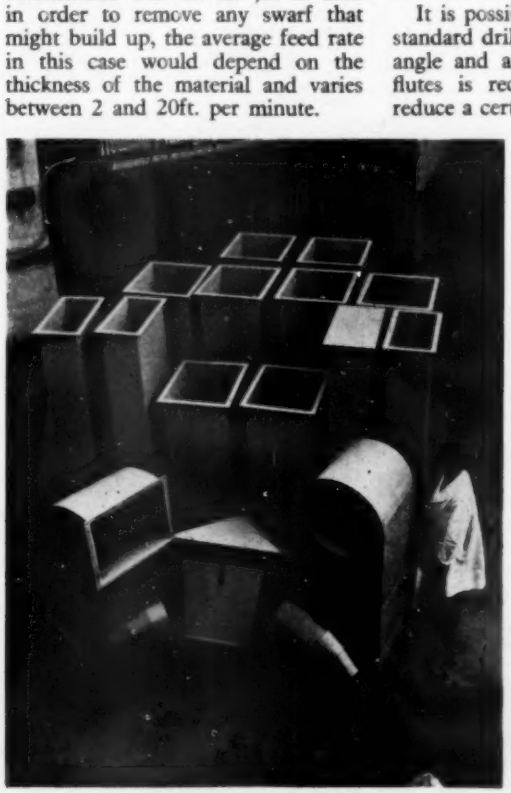


Fig. 1.—Fume extraction ducting of welded PVC construction

THE CHEMICAL RESISTANCE OF POLYTHENE

[Alkathene 2 (I.C.I. Polythene)]*

Chemical	Temperature 20°C.	60°C.
Acetaldehyde 100%	2	3
Acetic Acid 10%	1	1
60%	1	1
Glacial	2	3
Acetone 100%	3	3
Alcohol, Amyl	1	
,, Butyl	1	
,, Cetyl	1	
,, Ethyl 40% w/water	1	
100%	3	
,, Furfuryl	3	
,, Methyl 6%	1	
100%	2	
Alum	1	1
Aluminium Chloride	1	1
,, Fluoride	1	1
,, Hydroxide	1	1
,, Sulphate	1	1
Ammonia 0.88 S.G. solution	1	1
dry gas	1	1
Ammonium Bicarbonate	1	1
,, Carbonate	1	1
,, Chloride	1	1
,, Hydrosulphide	1	1
,, Hydroxide	1	1
,, Metaphosphate	1	1
,, Nitrate	1	1
,, Persulphate	1	1
,, Phosphate	1	1
,, Sulphate	1	1
,, Sulphide	1	1
,, Thiocynate	1	1
Amyl Acetate	3	
Aniline	3	
,, Hydrochloride	3	
,, Sulphate	3	
Animal Oils	2	3
Antimony Chloride	1	1
,, Trichloride	1	1
Arsenic Acid concentrated	1	1
"Arcton" 6	2	
Barium Carbonate	1	1
,, Chloride	1	1
,, Hydroxide	1	1
,, Sulphate	1	1
,, Sulphide	1	1
Beer	1	1
Benzaldehyde 100%	3	
Benzene	3	
Benzene-sulphonic Acid	3	
Benzyl Alcohol	3	
Bismuth Carbonate	1	1
Borax	1	1
Boric Acid	1	1
Boron Trifluoride	1	
Brine	1	1
Bromine 100% dry gas	3	
Calcium Bisulphite	1	1
,, Carbonate	1	1
,, Chlorate	1	1
,, Chloride	1	1
,, Hydroxide	1	1
,, Hypochlorite	1	
,, Nitrate	1	
,, Phosphate	1	

* Taken from Imperial Chemical Industries publication, I.S.380: "Chemical Resistance of Alkathene."

Chemical	Temperature 20°C.	60°C
Calcium Sulphate	1	
Camphor Oil	3	
Carbon Dioxide	1	
,, Disulphide	3	
,, Monoxide	1	
,, Tetrachloride	3	
Castor Oil	3	
Chloral Hydrate	3	
Chlorine 100% dry gas	2	3
,, liquid	3	
,, Water 2%	1	1
saturated solution	1	2
Chloroform	3	
Chlorosulphonic Acid	3	3
Chrome Alum	1	1
Chromic Acid plating solution	1	1
Cider	1	
Citric Acid	1	1
Copper Chloride	1	1
,, Cyanide	1	1
,, Fluoride	1	1
,, Nitrate	1	1
,, Sulphate	1	1
Creosote	3	
Cresols	3	
Cresylic Acids	3	
Cupric Chloride	1	1
,, Nitrate	1	1
,, Sulphate	1	1
Cyclohexanol	3	
Cyclohexanone	3	
Detergents, Synthetic (normal user conditions)	1	1
Developers, Photographic	1	1
Dextrose	1	1
Dibutyl Phthalate	2	3
Diethyl Ether	3	3
Diethylene Glycol	1	
Dioctyl Phthalate	2	3
Disodium Phosphate	1	
Emulsifiers all concentrated	1	
Emulsions, Photographic	1	
Ether	3	
Ethyl Acetate	2	3
Ethylene Dichloride	3	
Ferric Chloride	1	
,, Sulphate	1	1
Ferrous Ammonium Citrate	1	1
,, Sulphate	1	1
Fixing Solution, Photographic	1	1
Fluorine	2	3
Fluosilicic Acid	1	
Formaldehyde 40% w/water	1	1
Formic Acid 3%	1	1
10%	1	1
25%	1	1
50%	1	1
100%	1	1
Fruit Pulp	1	
Furfuryl Alcohol	3	
Glucose	1	
Glycerine	1	1
Grape Sugar	1	1
Hydrobromic Acid 50%	1	1
100%	1	1
Hydrochloric Acid 10%	1	1
22%	1	1
concentrated	1	1
Hydrofluoric Acid 4%	1	1
40%	1	1
60%	1	1
concentrated	1	2
Hydrogen	1	1
,, Peroxide 3% (10 vols.)	1	
12% (40 vols.)	1	
30% (100 vols.)	1	
90% and above	1	
,, Sulphide	1	
Hydroquinone	1	
Hypochlorous Acid	2	3
Lactic Acid 10%	1	1
100%	1	1
Lead Acetate	1	
,, Arsenate	1	
,, Tetra-Ethyl	1	
Linseed Oil	2	3
Magnesium Carbonate	1	1
,, Chloride	1	1
,, Hydroxide	1	1
,, Nitrate	1	1
,, Sulphate	1	1
Maleic Acid 25%	1	1
50%	1	1
concentrated	1	1
Manganese Sulphate	1	1
Mercuric Chloride	1	1
,, Cyanide	1	1
Mercury	1	
Metallic Soaps	1	
Methyl Acetate	3	3
,, Bromide	2	3
,, Chloride	3	3
,, Ethyl Ketone	2	3
Milk	1	
Mineral Oils	2	3
Monochlorbenzene	3	3
Nickel Chloride	1	1
,, Nitrate	1	1
,, Sulphate	1	1
Nitric Acid 5%	1	1
10%	1	1
25%	1	1
50%	2	3
70%	2	3
95%	3	3
Nitrobenzene	2	3
Oxalic Acid	1	1

Chemical	Temperature 20°C.	60°C.
Oxygen	1	
Paraffin	2	3
Petrol	3	3
Petroleum Ether	3	3
Phenol	3	
Phosphoric Acid 25%	1	1
30%	1	1
50%	1	1
95%	2	3
Phosphorous Oxychloride	3	3
,, Pentoxide	1	1
,, Trichloride	1	
Photographic Developers	1	
,, Emulsions	1	
,, Fixing Solutions	1	
Picric Acid 1% w/water	1	
10% w/alcohol	1	
Potassium Acid Sulphate	1	1
,, Bicarbonate	1	1
,, Bichromate	1	1
,, Bisulphate	1	1
,, Borate	1	1
,, Bromate	1	1
,, Bromide	1	1
,, Carbonate	1	1
,, Chlorate	1	1
,, Chloride	1	1
,, Chromate	1	1
,, Cuprocyanide	1	1
,, Cyanide	1	1
,, Dichromate	1	1
,, Ferricyanide	1	1
,, Ferrocyanide	1	1
,, Fluoride	1	1
,, Hydroxide 1%	1	1
10%	1	1
concentrated	1	1
,, Nitrate	1	1
,, Perborate	1	1
,, Permanganate	1	1
,, Persulphate	1	1
,, Phosphate	1	1
,, Sulphate	1	1
,, Sulphide	1	1
,, Thiosulphate	1	1
Salicylic Acid	1	1
Sea Water	1	1
Silicone Fluids	2	
Silver Cyanide	1	1
,, Nitrate	1	1
Soap Solution	1	1
Sodium Acetate	1	1
,, Acid Sulphate	1	1
,, Aluminate	1	1
,, Benzoate	1	1
,, Bicarbonate	1	1
,, Bisulphate	1	1
,, Bisulphite	1	1
,, Borate	1	1
,, Bromide	1	1
,, Carbonate	1	1
,, Chlorate	1	1
,, Chloride	1	1
,, Cyanide	1	1
,, Ferricyanide	1	1
,, Ferrocyanide	1	1
,, Fluoride	1	1
,, Hydroxide 1%	1	1
10%	1	1
40%	1	1
concentrated	1	1
,, Hypersulphate	1	1
,, Hypochlorite 15% Cl	1	1
,, Metaphosphate	1	1
,, Nitrate	1	1
,, Nitrite	1	1
,, Peroxide	1	1
,, Phosphate	1	1
,, Silicate	1	1
,, Sulphate	1	1
,, Sulphide 25%	1	1
concentrated	1	1
,, Sulphite	1	1
,, Thiosulphate	1	1
Soft Soap	1	1
Stannic Chloride	1	1
Stannous Chloride	1	1
Starch	1	1
Stearic Acid	1	1
Sucrose	1	1
Sulphur colloidal	1	
,, Dioxide 100% dry	1	
100% moist	1	
Sulphuric Acid 10%	1	1
20%	1	1
30%	1	1
40%	1	1
50%	1	1
60%	1	1
70%	1	2
95%	2	3
98%	2	3
fuming	3	3
Surface Active Agents (emulsifiers, synthetic detergents and wetting agents) normal dilutions	1	1
Tallow	1	
Tannic Acid	1	1
Tanning Extracts	1	1
Tartaric Acid 10%	1	1
Toluene	3	3
Transformer Oil	2	3
Trichlorethylene	3	3
Tricresyl Phosphate	3	3
Triethanolamine	2	3
Trisodium Phosphate	1	1

Chemical	Temperature 20°C.	60°C.
Turpentine	2	3
Vegetable Oils	2	3
Vinegar	1	1
Water	1	1
Wetting Agents normal dilutions	1	1
Whey	1	
Wines and Spirits	1	
Xylene	3	3
Yeast	1	
Zinc Chloride	1	1
,, Oxide	1	1
,, Sulphate	1	1

1 indicates Satisfactory.
2 ,, Some Attack or Absorption (may be considered where alternative materials are unsatisfactory).
3 ,, Unsatisfactory.

CHEMICAL RESISTANCE OF PVC*

Reagent	Temperature 20°C.	60°C.
Acetaldehyde 40%	1	2
100%	3	3
Acetic Acid 80–100%	2	3
25–60%	1	2
1–25%	1	2
Acetone	3	3
Adipic Acid	1	2
Allyl Alcohol	2	3
Ammonium Chloride solution	1	2
,, Sulphate solution	1	1
Alum (saturated solution)	1	2
Ammonia Gas 100% dry	1	1
,, Liquid 100%	2	2
,, 0.880	1	1
Ammonium Chloride solution (saturated)	1	2
,, Fluoride solution 20%	1	2
,, Nitrate (saturated)	1	2
,, Sulphate (saturated)	1	2
,, Sulphide (saturated)	1	2
Aniline 100%	3	3
,, Hydrochloride (saturated)	3	3
Anthraqinone Sulphuric Acid	1	
Amyl Acetate 100%	2	
Antimony Trichloride	1	2
Arsenic Acid	1	2
Benzaldehyde	2	3
Benzene	3	3
Benzine	1	1
Benzine/Benzene 80:20	1	1
Benzoic Acid	1	2
Bleach Lye 100%	1	1
Boric Acid solution (dilute)	1	2
,, ,, (concentrated)	1	2
,, ,, (cold saturated)	1	1
Bromic Acid 10%	1	
Bromine Gas (weak)	1	
,, ,, (concentrated)	1	
,, Liquid 100%	3	3
,, Water 10%	1	2
Butadiene 100%	1	1
Butane Diol 10%	1	2
60%	1	3
100%	3	
Butyl Alcohol 100%	2	2
,, Acetate 100%	3	3
Butyric Acid 20%	1	2
,, ,, (concentrated)	3	3
Calcium Chloride solution (cold saturated)	1	1
,, Hypochlorite (bleach solution)	1	1
,, Nitrate 50% solution	1	2
Carbon Disulphide	2	3
,, Dioxide 100% dry	1	1
,, ,, 100% wet	1	2
,, ,, solution (8 atmospheres)	1	2
,, Tetrachloride	2	3
,, Monochloracetic Acid 100%	1	2
Chloric Acid 1–2% (aqueous)	1	2
Chlorine (dry gas)	1	2
,, (moist gas)	2	
,, (liquid)	3	3
,, (water)	2	2
Chlor-sulphonic Acid	2	3
Chloro-sulphuric Acid 100%	2	
Chloroform	3	3
Chromic Acid (including plating solution)	1	1
Citric Acid 10%	1	2
,, ,, saturated	1	2
Coconut Oil Alcohols	1	1
Commercial Starch solution	1	1
Copper Fluoride 20%	1	1
,, Sulphate saturated solution	1	2
Cresol	2	3
Croton-aldehyde	3	3
Cuprous Chloride	1	2
Cycylohexanol	3	3
Cyclohexanone	3	3
Dextrin (saturated solution)	1	1
Dibutyl Phthalate	2	2
Diethylene Glycol	1	1
Ethyl Acetate 100%	3	3
,, Acrylate	3	3
,, Alcohol (any concentrations)	1	2
,, Butyrate	2	3

* Taken from "Manual for Industrial PVC Sheet" issued by Bakelite Ltd.

Reagent	Temperature 20°C.	60°C.
Ether	3	
Ethylene Chloride	3	
,, Dichloride	3	
,, Glycol	1	3
Fatty Acids	1	2
Ferric Chloride saturated	1	1
,, Sulphate solution	1	1
Fluosilicic Acid 32%	1	1
Formaldehyde 40%	1	2
Formic Acid 50%	1	2
,, ,, concentrated	1	3
Fruit Pulp	1	1
Fuel Oils	2	2
Glucose	1	1
Glycine	1	1
Glycol	1	1
Glycollic Acid 30%	1	1
Grape Sugar (saturated)	1	1
Hydrobromic Acid 50%	1	1
Hydrochloric Acid dry gas	1	1
,, ,, 10%	1	1
,, ,, 30%	1	
35%	1	1
over 30%	1	1
Hydrofluoric Acid 40%	1	2
60%	1	2
concentrated	2	2
Hydrogen	1	1
,, Peroxide	1	2
Ketones	3	3
Lactic Acid 10%	1	2
90%	3	3
Lead Acetate saturated solution	1	1
,, Tetraethyl 100%	1	1
Linseed Oil	1	1
Magnesium Chloride saturated solution	1	1
,, Sulphate saturated solution	1	1
Maleic Acid saturated solution	1	2
Malic Acid	1	
Methyl Alcohol 100%	1	2
,, Bromide	2	
,, Chloride 100%	2	
,, Methcrylate Monomer 100%	3	
Methylene Chloride	3	
Milk	1	1
Mineral Oils	1	1
Molasses (commercial)	1	1
Nickel Sulphate saturated solution	1	1
Nicotine (normal concentrations)	1	
Nitric Acid 1–30%	1	2
30–50%	1	2
50–60%	1	2
70%	1	2
95%	3	
98%	3	
Octyl Cresol	2	2
Oils and Fats (vegetable)	1	2
Oleic Acid	1	2
Oxalic Acid (dilute)	1	2
,, ,, (saturated)	1	2
Oxygen	1	1
Ozone	1	1
Perchloric Acid 10%	1	2
Petrol (free from aromatics)	1	1
Petrol/Benzine 80/20	3	3
Phenol 90%	1	2
Phenyl Hydrazine 100%	3	
Phosgene Gas 100%	1	1
Phosphine	1	2
Phosphoric Acid 30%	1	1
90%	1	1
Phosphorus Yellow	1	
,, Pentoxide 100%	1	
,, Trichloride 100%	3	
Photographic Developers	1	1
,, Emulsions	1	1
,, Fixing solutions	1	1
Picric Acid 1%	1	
Potassium Borate 10%	1	1
,, Bromate 10%	1	1
,, Bromide (saturated)	1	1
,, Chloride (saturated)	1	1
,, Chromate 40%	2	3
,, Cyanide (saturated)	1	1
,, Dichromate (saturated)	1	1
,, Ferro-ferricyanide (saturated solution)	1	1
,, Fluoride	1	2
,, Hydroxide (concentrated)	1	1
,, Nitrate (saturated)	1	1
,, Permanganate (15%)	1	2
,, Persulphate (saturated)	1	2
Propane Liquid and Gas	1	2
Pyridine	3	
Sea Water	1	1
Silicic Acid	1	1
Silver Nitrate solution	1	2
Soap solution (any concentrations)	1	1
Sodium Benzoate (33% solution)	1	2
,, Bisulphite (saturated solution)	1	1
,, Borate	1	2
,, Bromide	1	1
,, Chlorate (saturated)	1	2
,, Chloride	1	1
,, Hydroxide (solution)	1	1
,, Nitrate	1	1
,, Sulphide (saturated)	1	1
Stearic Acid	1	1
Sulphur Dioxide (dry 100%)	1	1
,, ,, (wet 100%)	1	2
,, ,, (liquid)	2	3
Sulphuretted Hydrogen	1	1
Sulphuric Acid 10%	1	
,, ,, 40%	1	1
Sulphuric Acid 40–80%	1	1
,, ,, 80–90%	1	2
,, ,, 90%	2	2
,, ,, 98%	2	3
,, ,,	1	
Tallow	1	1
Tannin Extracts (normal concentrations)	1	
Tartaric Acid 10%	1	
,, concentrated	1	2
Tin Trichloride	1	2
Toluene	3	3
Transformer Oil	1	1
Turpentine	1	
Urea up to 30%	1	1
Vinegar (commercial)	1	2
Vinyl Acetate 100%	3	
Water	1	1
Wines	1	
Xylene	3	
Yeast	1	1
Zinc Chloride (saturated)	1	1
,, Sulphate	1	1
Acid Mixtures		
Chromic/Sulphuric/Water:		
400/10/1000	1	2
250/200/1000	1	2
Sulphuric/Nitric/Water:		
48/49/3	1	2
50/50/0	2	3
10/20/70	1	
11/87/3	2	
50/51/19	1	

1—Satisfactory 2—Some attack 3—Unsuitable

These tables are intended as a guide only

DUAL PACKING

A new sheet packing that combines the performance features of Hypalon synthetic rubber and asbestos fibre is now available for applications where chemical action causes excessive problems of maintenance and replacement. Designed for use as gasketing on flanges, condenser heads, pump casings, hand-holes and manholes, the new packing is available in five thicknesses, ranging from 1/64 to 1/8in.

Hypalon, used as the base for the packing, shields the asbestos from contact with chemicals and increases wear life.

The packing is not subject to cold flow under compression, has good flexibility that makes for convenience in installation, and does not become brittle under exposure to heat. Compressibility runs approximately 20% and recovery a minimum of 40%.

RRI Malaya

THE Journal of the Rubber Research Institute of Malaya is published at irregular intervals, a volume being completed when a convenient number of pages has been reached. The latest issue, Volume 16, part 2, contains four articles on recent studies made. The first of these deals with the short term preservation of natural latex, and discusses the value of the various methods of preserving latex for short periods preceding the production of dry rubber by acid coagulation.

In the second report, the results of surveys of the ground cover vegetation on rubber estates are reviewed. There are apparently indications that prolonged Hevea cultivation, with modern upkeep methods, has impoverished the flora and led to the predominance in the vegetation of types believed to be less beneficial to the growth of Hevea than the displaced species.

The soap titration method of estimating the particle size of Hevea latex is discussed in the third article. An investigation was made into the effects of storage, ammonia concentration and temperature on the values obtained for particle size of latices determined by this method. The marked influence of temperature on the accuracy of the method is also discussed. Particle size variation in clonal latices are discussed in relation to their mechanical stabilities. It is shown that the ASTM mechanical stability test does not determine the time required for the onset of agglomeration of particles.

The last article gives an account of the influence of seed treatment on the germination of Calopogonium mucunoides, Centrosema pubescens, Flemingia congesta and Pueraria phaseoloides. Among the treatments studied are: storage conditions, mechanical scarification, concentrated sulphuric acid treatment, and immersion in water, glycerine and kerosene. A brief report is also given of the effects of germination of Gibrel, Kinetin and infra-red irradiation.

Baker Perkins Group

A change of title is announced by Rownsons (Conveyors) Ltd., who became members of the Baker Perkins Group last June. The company will now be known as Rownson Conveyors Ltd. The address and telephone number remain unchanged: Maiden Lane, York Way, London, N. 7. (Gulliver 7721.)

CIBA Coatings Cheaper

Increased production from the new CIBA (ARL) epoxy resin factory has led to substantial reductions in the prices of 'Araldite' epoxy resin surface coatings. The new prices, which are of particular interest to the paint industry, came into effect on August 1; further details are available from CIBA (ARL) Ltd., Duxford, Cambridge.

MEN *and* MATTERS

A Review of People and Events

by Peter Richards

EIGHTY 7.00 - 41 specially designed Dunlop tyres and sixteen giant wheels for Bluebird are now on their way to America for Donald Campbell's world land-speed record attempt.

The diameter of the tyres is large and the section relatively small and squat. The tyre mounted on its wheel stands 4ft. 4in. high and the cross-section only 7in.—about half-an-inch wider than a tyre on, say, a big Jaguar car. Bluebird's tyres are quite smooth and have no tread pattern. The protective rubber covering over the casing is only one-fiftieth of an inch thick—if this rubber were any thicker, centrifugal force would pull it off. (One of my technical colleagues tells me that at 50mph a 1oz. piece of rubber requires a force of 10lb. to hold it on to the tread; at 500mph this small piece of rubber would need a force of 500lb. to keep it on the tread of a tyre for Bluebird. An ordinary car tyre deflects and recovers ten times per second; at 500mph the larger diameter world's land-speed record tyre will deflect more than fifty times per second.)

This thin covering of specially compounded rubber is quite sufficient for a run at record speed over the smooth Salt Flats.

The casing is made from Fortisan rayon cord and the bead wires are said to be the strongest ever used in tyre manufacture.

Natural Used

Each tyre is fitted with an inner tube of conventional construction. The valve used has a specially strong spring made to very fine limits. If an ordinary type of valve were used, centrifugal force would open the spring and deflate the tyre long before Bluebird reached the measured mile. As an additional precaution to the stronger spring, the valve cap is wired on to the stem, the whole assembly withstanding a pressure well in excess of 100lb. per sq. in.

All the rubber compounds, which are of natural rubber, used in both the tyre and tube are formulated to reduce heat generation and to resist the effect of heat.

Each of the sixteen wheels manufactured for the attempt has involved 150 separate operations and 250 man-hours to complete. Each wheel has been fully tested, including a free fling test up to 650mph on a turbine test bed.

The tyres and wheels are among Bluebird's most important components—and everything possible has been done to make sure that the power of the Proteus gas turbine engine is transmitted through them to the track under complete control.

Flying Car

Another of the seventy firms who are giving their products to the Bluebird project is the B.B. Chemical Co.

Donald Campbell will be protected by a laminated glass screen in front of his face, an aluminium cushioned headrest and a Perspex blister over the whole. Boscoprene cement 2100 has been used together with a Boscolite primer for sealing the glaze vinyl laminate armour glass to aluminium frames. This forms the protective screen inside the blister, which is itself secured to its circular frame by Boscoprene.

Incidentally, although Boscoprene has been used for some time for sealing aircraft cockpits, including the Comet, Viscount, Britannia and Argosy, this is the first time it has been used on the windshield of a car—an indication that Campbell's speed attempt will take him into the realm of flying, with many of the same problems of aerodynamical stress.

Building for Builders

The expansion in the polymer industry has meant big business for firms concerned with the design and building of chemical plant. And in some cases it has led to expansion on their own account.

George Wimpey, for example, last week took over a new office block to house staff dealing with this side of their business. The 550 people who will move into Flyover House — it stands at the point where the Great West Road meets the Chiswick Flyover—are working on such projects as the design and procurement of the £4m. Union Carbide polythene plant at Altona, Australia, and a variety of other work in countries which include Belgium, Nigeria and Kuwait.

At home, the order book includes comprehensive contracts for Shell at Carrington and projects at Grangemouth.

Two Years' Hard

Fresh examples of reinforced plastics being proved under exacting

When Vitafoam Ltd. took delivery of its third latex delivery tanker it was launched with the traditional bottle of champagne by the company's resident beauty queens: brunette Shirley Whitelegge, furniture queen, and blonde 'Miss Britannia' Anne Worrall, beauty queen of the Royal Naval Association

Unique idea becomes successful product with PLIOLITE LATEX

Unique in concept and construction is the best way to describe the handsome floor covering pictured above. The idea is to use it first as temporary carpeting, later as permanent padding under conventional carpeting. It's made of colourful, durable open-weave cotton, permanently bonded to long-lasting foam rubber. The price—surprisingly low!

A vital part in turning this bright idea into a successful product was played by PLIOLITE LATEX 5352. This new styrene/butadiene rubber latex was chosen primarily because it can be used *without* blending with natural rubber latex to make resilient, durable foam. Other reasons for its selection: Outstanding uniformity. Excellent physical properties.

How can Pliolite Latex 5352 help you put your product out in front? You'll find it makes an excellent, economical cushioning for *many* products. For details see your Goodyear Chemical Distributor.

Pliolite — T.M. The Goodyear Tire & Rubber Company, Akron, Ohio, U.S.A.

Distributed in the United Kingdom by :

HUBRON SALES LTD., FAILSWORTH, MANCHESTER. TEL: FAILSWORTH 2691

Other Distributors in all Western European Countries :

GOODYEAR

CHEMICAL DIVISION

Goodyear International Corporation, Chemical Division, Akron, 16, Ohio, U.S.A.

The Goodyear Tyre & Rubber Company (Great Britain) Ltd., Chemical Division, 8-9 Salop Street, Wolverhampton.

TUFTED
CARPET
YARNS
AND
COTTON
AND
SYNTHETIC
FABRICS
FOR
THE
RUBBER
ELECTRICAL
AND
CHEMICAL
TRADES

JOHN BRIGHT & BROTHERS LTD.

SPINNERS DOUBLERS & MANUFACTURERS

ROCHDALE.

TELEPHONE: ROCHDALE 4141 (5 LINES)
TELEGRAMS: "BRIGHTS" ROCHDALE
ESTD. 1809.

conditions are constantly cropping up. The other day I came across an application that involved wear and tear over a long period.

On June 21 1958, Fothergill and Harvey Ltd. put into service what was believed to be the first coal tipper ever to be constructed from glass reinforced plastics. The reinforcements used in the 6-ply laminate were the company's own Tyglas woven rovings, and Tygamat chopped strand mat.

Since 1958 the tipper has covered 70,000 miles, shifting 90 tons of highly corrosive washed smalls per week, from pithead to works boiler house bunkers, an approximate total of 90,000 tons. In addition it has moved coal from reserve stocks to the boiler houses and carried glass waste loads.

From unretouched before-and-after photographs I can see that the tipper has come through with flying colours despite the sulphur present in washed coal and the highly corrosive chlorine from the colliery washing plant coupled with the abrasive action of the coal during loading, carrying, and tipping.

There are no signs of corrosion or abrasion. And not many materials can say that after two years' hard

Busy Time Ahead

One of the busiest men in the rubber industry during the next few months is likely to be Harvey S. Firestone, Jun., chairman and chief executive officer of Firestone Tire and Rubber. Four new plants are due to be opened shortly, and plans are now underway for building the company's new French synthetic rubber plant at Port Jerome, and for the Indian synthetic complex that is to go up at Bareilly.

The installations that are nearly complete are the polybutadiene plant at Orange, Texas, which will have a capacity of 30,000 tons, the nylon plant at Hopewill, Virginia, and tyre plants in Canada and France.

The new plants, which bring the company's total up to 75, are part of a giant $120m. expansion — the latest in a series of expansions that, in 60 years, have pushed it from a small one-plant operation with 12 employees to an enterprise with installations in 21 countries employing 85,000 people.

Big as it is, Firestone is still in a way a family business. Harvey S. Firestone is the son of the founder and his three brothers are associated with the firm. One of them, Roger S. Firestone, is president of the Firestone Plastics Co. and Firestone Synthetic Fibers Co.

* * *

F. W. Whitehead, sales director of Vitafoam Ltd., and B. A. Batchlor, export manager, have completed a circuit on the Continent. They report brisk business, particularly in the Netherlands.

* * *

Novadel Ltd. have appointed Mr T. F. Lendon to the technical sales staff. Mr Lendon has had considerable production, development and research experience mainly with naphthenates, drying oils and polymerization accelerators.

* * *

L. M. Hesse, London area manager of The Geigy Company Ltd., has died. Mr Hesse had been with Geigy all his working life and moved from Manchester to London as area manager shortly after the last war.

* * *

The article on rubber products manufacture which will appear in the 15-volume US publication 'Encyclopedia of Science and Technology'—the biggest work of its kind ever produced—has been written by Arthur E. Juve of B. F. Goodrich.

* * *

Dr I. G. Williams (I.C.I.) will deliver a lecture on high pressure polythene at the Finnish Plastics Association's international convention, which will be held at Helsinki, September 14-16.

* * *

New show houses at a Norwich New Homes Exhibition include Formica-surfaced kitchens. The exhibition is part of a scheme which will involve building 500 houses in the neighbourhood in two years.

* * *

Cricket nets are now being made of high density polythene by the Lancashire Hill Rope and Twine Co. Ltd. The nets are manufactured from Cowlene X3 monofilament—based on Rigidex hd polythene — supplied by British Celanese.

Question Corner — 130

(Second Series)

455. What methods may be used for pre-treating the surface of polythene for printing?

(Answer next week)

Answer to Question Corner — 129

454. There are some advantages in flat film extrusion as compared with blown film extrusion.

Techniques for the extrusion of flat film in wide widths are more generally known, and more easily controlled, than those for the same widths in flattened blown tubing.

In flat film extrusion somewhat faster haul-off speeds can be used, compared with the lower speeds for tubing, depending on cooling techniques and film gauge. Higher speeds mean, of course, lower cost per unit weight of film. Comparatively thin film, of the order of 1mil., can be made at fast extrusion speeds on large extruders with wide dies.

Gauge control is easier for flat than for blown film although improvements in the last few years in blown tube die design has narrowed the differences in gauge variation between the two techniques. In correcting gauge variations, adjustment on the wide flat film dies are more easily made than on blown tube dies.

Because of easier gauge control, conditions for printing can be more easily controlled on flat film. There is no problem in producing gusseted bags which will not block in the gussets after treatment.

Flat film can also be printed at faster speeds and with better register, and it can be printed in one operation so that both front, back and gussets of the bag are printed at once.

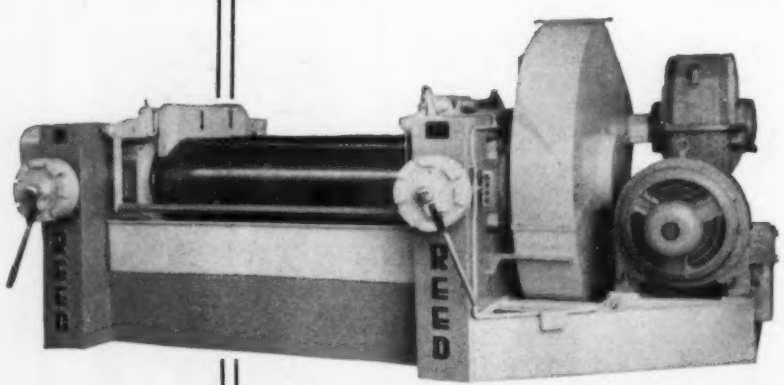
(Another question next week)

Polly Ester Says . . .

'Haul-off rate — tempo of tease in those naughty London clubs'

NOW

AN 84" MONOBLOCK MILL



with anti-vibration mounting, 175 h.p. drive and drilled rolls for accurate temperature control.

REED BROTHERS
(ENGINEERING) LIMITED

REPLANT WORKS
Woolwich Industrial Estate, London, S.E.18
Telephone: WOOlwich 7611 6. Cables: REPLANT, LONDON

From Metal to Plastics

NEWS FROM SOUTH AFRICA

METAL Containers (S.A.) (Pty.) Ltd. has ordered plastics forming equipment, which is an indication of the interest being taken by local metal container manufacturers in meeting the increasing demand for plastics. The Metal Box Company of South Africa Ltd. are making plastics fitments for a growing proportion of their products and it is expected that the future will see considerable local development along these lines.

Other recent development in the plastics field includes the work of Cape Town firms who are coating ships' propellers to resist the corrosive effect of sea water. Similar work is being done for the Rand mines.

Tyred Feet

Using pieces of old motor tyre, technicians of the Government Orthopaedic Centre, Salisbury, Southern Rhodesia, have invented a cheap, simple and effective foot for use by African amputees who wear peg-legs. The foot is expected to solve a major rehabilitation problem for many hundreds of Africans who have lost a leg, especially farm workers.

Most African amputees wear peg-legs which cost £25, rather than articulated legs at £65 or more. However, since peg-legs are not fitted with feet, the Africans are self-conscious and find difficulty in walking over soft ground, fields or mud on farms. The technicians studied the 'rampadashans' made by the Bechuana people from old motor tyres and sandals made by Manica and Mashonas. The new 'rampadashan' foot consists of a piece of tyre cut to the shape of a sole and nailed to the 'heel' of the peg-leg. Pieces of wood are nailed to the top of the sole to form the foot and another piece of tyre is fixed from the top of the foot to the front of the peg-leg.

A Salisbury orthopaedic surgeon described the foot as a 'revolutionary advance in artificial limbs' and anticipated that it would replace other forms of artificial feet.

Prof Raymond A. Dart, former Professor of Anatomy at the University of the Witwatersrand, said: 'This foot, added to the wonderful substitute complete lower limb which was produced and patented by the orthopaedic department of the University of Cape Town, represents probably the biggest breakthrough in constructive orthopaedic rehabilitation since the first attempts to make moveable artificial joints.'

A Quiet Period

The second quarter of this year has been uneventful as far as the natural rubber market is concerned, and prices have moved within rather narrow limits. The value of business transacted has been small due to the absence of sustained consumer interest. The price of latex recently increased by 6d. per gallon to 20s. 8d. per gallon cif Durban.

The supply of rayon yarn from Great Britain continues to be difficult. Reports indicate that the market for tyres is still difficult and highly competitive due to the prevailing conditions in the motor trade. Sales during the second quarter of this year did not remain on the level anticipated, possibly due to the 'emergency' conditions in existence, and production levels were also slightly down on those of the previous period.

One Process

Wayboot is the trade mark of the fully-moulded gumboots made by the Wayne Rubber Co. (Pty.) Ltd., which has also pioneered the local production of fully-moulded lined gumboots in one process, in which a vulcanizing process moulds the lining into the rubber under pressure in a single operation. This adds to the durability, strength and other qualities of the boot and eliminates tearing or frayed ends of the lining, so that the inside of the boot is free from damp. There is increasing industrial use of this boot where protective footwear is essential.

Pebble Rollers

The tyres of a motor car in South Africa would last longer if more rain fell, an expert told the Road Passenger Transport Association's conference in Germiston, Transvaal. The bus operator got only 1,000 miles or so for each millimetre of treadwear in South Africa, but the identical tyres in Manchester, England, for instance, gave the bus company 3,600 miles.

He said that water is the best lubricant for rubber and tyres wear slowly in wet weather.

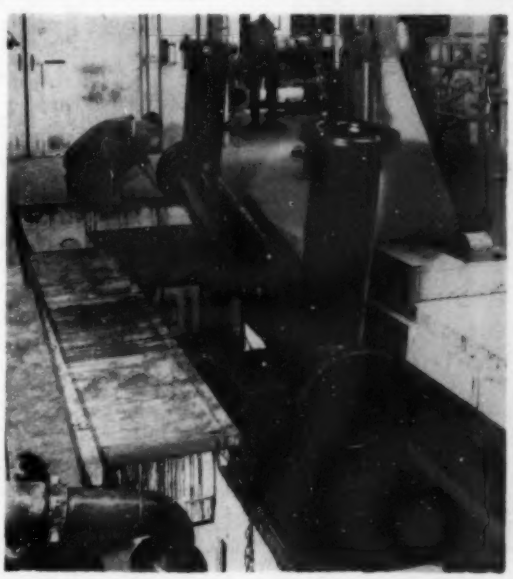
He added that motorists got longer tyre mileages on gravel roads than on tarmac, because little pebbles acted as roller bearings.

Variety

A plastics company in Southern Rhodesia is now exporting spoons to Kenya, planting pockets to South West Africa and Mozambique, and pill boxes to the Belgian Congo and South Africa.

Philblack G Down

The following reduced prices for Philblack G. GPF have now been announced. Ex works Avonmouth, 3 ton lots 6¼d., less than 3 tons 7d. Ex store London, Glasgow, Elton and Bury 7¾d. All per lb. nett; 50lb. multiwall paper bags inclusive.



Part of a 14-in. salt water pipeline which has been dipped in Vylastic 'RS' PVC to give a coating ⅛in. thick. The coating is said to have outstanding adhesion to the metal, and seam-free lining round intricate bends improves flow properties and reduces turbulence. This application, which has been carried out by Plastic Coatings Ltd., of Guildford, is believed to be the first of its kind. Vylastic 'RS' grade is based on Geon 121 PVC paste resin

THE

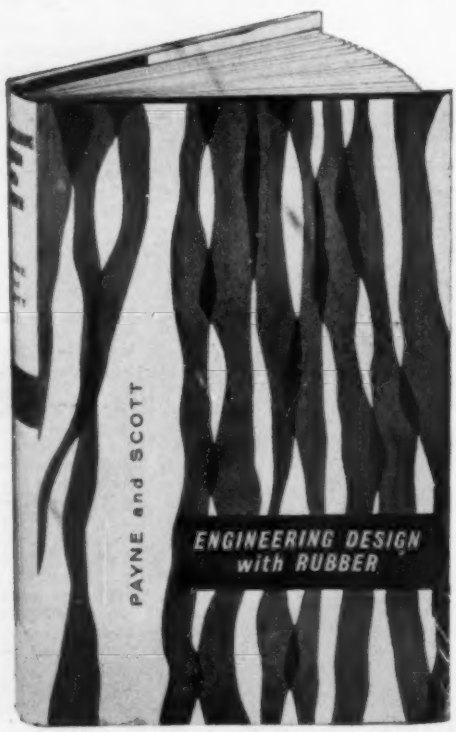
BARWELL BATCH EXTRUDER

The Barwell Extruder is a ram machine with a batch capacity comparable to a 3A Internal Mixer. It has many features which make considerable economies particularly in the production of extrusions for blanks and, in some circumstances it can free a mill previously used for warm up for conventional extruders. Extrusion temperatures can be much lower; the die is quickly changed; any cross-sectional area of extrusion from .004 to 15 sq. ins. is possible; there is no possibility of scorch and there is no wastage of compound.

Originally developed for the tyre retreading industry it is now available for exploitation in other fields.

Write or phone for details:—

BARWELL ENGINEERING LTD., SWAVESEY, CAMBRIDGE (TEL. Swavesey 383)



Now on Sale

Engineering Design with Rubber

A. R. PAYNE, B.Sc., A.Inst.P., A.I.R.I.
and
J. R. SCOTT, Ph.D., M.Sc., F.R.I.C., F.Inst.P., F.I.R.I.

R.A.B.R.M. MANUAL No. 4

The First theoretical examination of an increasingly important subject to appear in book form, it has also been designed to be a practical manual for engineers and rubber technologists faced with problems in rubber engineering design.

PRICE 50/-
(By Post 52/-)
PROSPECTUS ON REQUEST

Orders to:—
Rubber Journal and International Plastics Book Department, Maclaren House 131, Great Suffolk Street, London, S.E.1

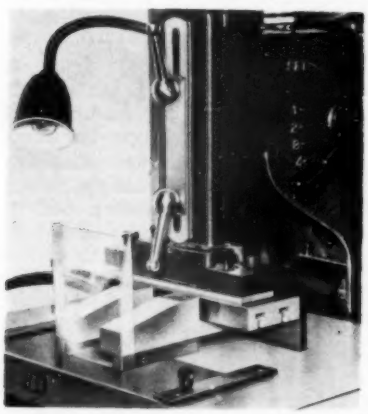
U.S.A. and Canada:—
Interscience Publishers Inc., New York

Welding Cellulose Acetate Boxes

A NEW application for one of the Acme range of plastics welding machines is the welding of cellulose acetate boxes. The standard Acme No. 2 machine pictured, rated at 800 watts output, has had added to it an adjustable electrode and barrier clamp, specially developed by H. F. Industrial Services Ltd. This can be fitted or removed in a matter of minutes.

It will handle cellulose acetate boxes or lids, of from 0.005in. upwards in thickness and the adjustment allows box widths of from 4in. to 10in. and depths of from ¼in. up to more than 3in., the length being as required.

The four main factors which make



possible the welding of cellulose acetate with this machine are that it has:

(1) been designed to oscillate on very high frequencies (above 73 megacycles);

(2) an inbuilt calibrated micrometer depth stop (an essential element in the control of depth of penetration on all acetate);

(3) a readily adjustable pressure control (with pressure adequate to eliminate the crazed effect caused by boiling of the plasticized content);

(4) a large dial timer, calibrated in tenths of a second.

The cost of the adjustable electrode complete with barrier clamp is in the region of £35. The Acme No. 2 Welder costs £385. Among PVC items that can be welded by this equipment are liquid filled sachets. The welder can be used for this purpose because the 'generator' is above table level.

Syphon made by Novadel Ltd. for delivering small quantities of liquid. It has been designed specifically for use with peroxides (*RJIP, July* 30, 179)

Thin Coatings

A new formulation of Tenite polythene especially designed to produce thin extrusion coatings on paper and other substrates is now being manufactured by Eastman in USA.

The new material, Tenite polythene 895, is said to have excellent adhesion and at weights as low as 7½lb. per ream (about 0.5mil.) it easily produces coatings that are free of pinholes, and its drawdown properties permit coatings as thin as 3lb. per ream (about 0.2mil.).

RABRM Translations

The following Research Association of British Rubber Manufacturers translations by R. J. Moseley, are listed for May 1960:

I. Physico-chemical characteristics of the processes of wetting of textile materials by solutions of high-molecular compounds. (I. Fiziko-khimicheskie kharakteristiki protsessov smachivaniya tekstil'nykh materialov rastvorami vysokomolekulyarnykh soedinenii) V. E. Gul', R. Ya. Fainberg, M. G. Maizel's, V. G. Raevskii and M. I. Sin'kova (Izv. Vyssh. Uchebn. Zaved., Khim. i Khim. Tekhn., 1958, No. 5, 114-9). 824 (3016T). Class 66T21.1.

Porous materials based on high-molecular substances. I. Preliminary experiments. (Poristye materily na osnove vysokomolekulyarnykh veshchestv. I. Predvaritel'nye eksperimenty) M. S. Monastyrskaya (Nauchno. Trudy Mosk. Tekhn. Inst. Legk. Prom., 1957, Sb. 8, 83-94). 825. (2377T). Class 66X1.

USSR P. 126611; appl. 9.2.59. Method of sulphur-free vulcanization of vulcanization stocks based on unsaturated synthetic rubbers using ammonium salts. A. S. Kuz'minskii, L. S. Fel'dshtein, S. E. Khanin and R. Sh. Frenkel'. 826 (3140T). Class 4252org.

On the nature of 'static' friction in rubber-like polymers. (O prirode 'staticheskogo' treniya kauchukopodobnykh polimerov) G. M. Bartenev and V. V. Lavrent'ev (Vys. Soed., 1960, **2**, No. 2, 238-42. 827 (3088T). Class 33422.

Purification of carbon black from foreign matter and grit. (Ochistka sazhi ot postoronnikh vklyuchenii i grita.) G. M. Zel'berg and V. Rybin. (Gaz. Prom., 1959, No. 6, 35-8.) 828 (3074T). Class 421C5.

BA to Visit Distillers Plastics

Members of the British Association for the Advancement of Science will visit the laboratories of British Geon Ltd., British Resin Products Ltd. and Distrene Ltd., Barry, Glamorgan, on September 6. This has been arranged as part of the programme for the Association's annual meeting, to be held at Cardiff (August 31-September 7).

The Association will see a varied programme of research, development and technical service work being carried out in the laboratories of the three companies, all of which are members of Distillers Plastics Group.

Typical of the many activities to be shown to members of the Association are demonstrations of moulding techniques with Geon rigid PVC and Rigidex high-density polythene; the production of non-woven fabrics with Hycar nitrile rubber, and the manufacture of sheet and film from Styron polystyrene. There will also be an opportunity to inspect a range of modern analytical instruments.

Bid for Lacrinoid

F. Francis and Sons (Holdings), has made a share exchange offer for the £176,000 capital of Lacrinoid Products.

Rubber Statistics

WORLD POSITION AT END OF MAY

THE following advance information on the world rubber situation during May is given by the Secretariat of the International Rubber Study Group (figures in long tons):

NATURAL RUBBER

	May	Jan./May
Production ..	155,000	795,000
Consumption ..	160,000*	837,500†
		Change Since Jan. 1, 1960
Stocks end-period:		
In producing areas	232,500	−22,500
In consuming areas	237,500	+40,000
Afloat	190,000	−40,000
	660,000	−22,500

* Including estimated imports into the Soviet Union of 7,750 long tons and into China of 8,500 long tons.

† Including estimated imports into the Soviet Union of 33,250 long tons and into China of 79,000 long tons.

SYNTHETIC RUBBER

	May	Jan./May
Production ..	162,500	810,000
Consumption ..	147,500	735,000
		Change since Jan. 1, 1960
Stocks end-period	335,000	+25,000

Malaya

Preliminary information was given last week of Malaya's ocean shipments for the month of June. A breakdown of these shipments is:

Ocean shipments to:	Sheet and Crepe	Latex
UK	14,097	2,267
South Africa ..	1,475	81
Canada	1,271	—
India	1,528	—
Australia	2,487	732
Czechoslovakia ..	1,965	—
France	3,813	667
West Germany ..	6,324	1,322
Italy	3,524	805
Netherlands	975	267
Poland	6,296	695
Spain	1,723	190
Russia	1,680	—
USA	11,911	1,301
Argentine	1,531	112
China	3,665	—
Japan	6,904	982
Others	7,047	485
	78,216	9,906

Total sheet and latex—88,122 tons.

The total ocean shipments for the first six months of this year now stand at 544,673 tons.

Reducing Scuffing

On certain tyre sizes for van fitment, Goodyear (GB) are incorporating a newly developed sidewall scuff band. This is a band of tough rubber moulded on to both tyre sidewalls, with the object of minimizing the effects of kerbside chafing and scuffing. The band includes a depth indicator by means of which the rate of sidewall wear can be determined before any serious damage has taken place.

The band is being made in sizes 25 x 6-8 ply rib all weather, and 27 x 6-8 ply rib all weather, but Goodyear state that further sizes are being considered.

The directors of Reichhold Chemicals Ltd. announce that contracts have now been exchanged for the purchase of the freehold factory site at Havant. This was referred to in the circular letter to shareholders dated July 6 1960, which accompanied the provisional allotment letter of the same date.

UMP Improve Service

Universal Metal Products Ltd., of Salford, Lancs., have developed an entirely new transport system to improve the service to customers in the South of England. This incorporates a nightly shuttle service to London and the south, the goods then being placed on vehicles located at a central London depot from which daily deliveries are made. This system takes the place of the previous weekly or twice-weekly deliveries.

DIHYDROXYACETONE PRODUCTION

Although dihydroxyacetone has been mentioned in biochemical literature for at least a century, it has never until recently been available in commercial quantities. A method has now been developed by the Wallerstein Company, Staten Island, New York, by which the material, a fermentation product of glycerine, may be produced in large quantities at a reasonable price.

Dihydroxyacetone, by virtue of its molecular structure which contains two primary alcohol groups and a carbonyl group, can be used to produce pharmaceuticals, dyes, emulsifiers, plasticizers, fungicides and alkyd resins. Reaction products of DHA and sulphonamides show promise as leather tanning agents and wood preservatives. DHA itself is a possible catalyst for redox polymerizations and as a modifier for starches, textiles and paper products. Many other possible uses in the medical and biological field are known, and one which has recently created interest is the production of sun-tan lotions which have the ability to produce a tan in the human skin without exposure to sunlight.

Other uses for glycerine and its derivatives in the plastics field include the preparation of polyurethanes and cellophane, which maintains its position in the packaging field despite competition from other synthetics.

I. M. L. D. Forde, O.B.E., T.D., has been appointed a director of James Stott Ltd., a subsidiary of John Bright and Bros. Ltd.

Downward Trend Continues in Canada

The downward trend in the Canadian Rubber Products Industry still continued in 1958, when factory shipments with a total value fob plant of $308.3m. were reported, $17.7m. or 5.4% below the comparable 1957 total of $326m. Employment, which stood at 22,178 in 1957, fell to 19,943 in 1958. Materials used by the industry cost $128.5m. compared to $144.2m. the previous year, a decrease of $15m. or 10.9%.

In 1958 the industry consisted of 89 establishments, of which 33 were in Quebec, 46 in Ontario, three in Manitoba, two in Alberta, and five in British Columbia. Ontario accounted for 82.1% of the total factory shipments and for 71.0% of the employment; Quebec for 17.7% of the shipments and for 28.7% of the number of employees.

Shipments of tyres and tubes amounted to 52.5% of this industry's total in 1958. Tyres, which alone accounted for 49.8%, numbered 8.4m., and had a factory selling value of $153.4m., whereas in 1957 shipments of tyres amounted to 8.3m. valued at $157.8m. Footwear ranked second in importance; and, in 1958, the industry shipped 13.3m. pairs with a total value fob plant of $29.7m., as opposed to the 15,169,748 pairs worth $32.8m. sold in 1957.

High-speed electric blenders, recently introduced by Dewenter Industries in USA, feature containers moulded of Cycolac ABS resin manufactured by the Marbon Chemical Division of Borg-Warner Corp., whose UK agents are Anchor Chemical.

PATENT SPECIFICATIONS

The following information is prepared from published Patent Specifications by permission of the Controller of H.M. Stationery Office. The full Specifications can be obtained from the Patent Office, 25 Southampton Buildings, W.C.2, at 3s. 6d. per copy (including postage).

Preparation of Polymeric Mixtures and Compounds

No. 836,053. The British Rubber Producers' Research Association. Inventors: R. J. Ceresa, D. J. Elliott and W. F. Watson. Application, June 14 1957. Filed, May 15 1958. Published, June 1 1960. Addition to No. 832,193.

The process of Specification No. 832,193 (*RJIP*, July 9 1960, 68) according to which polymeric materials are made by masticating a polymer which is not rubber-like at room temperature with a monomer, is accelerated by incorporating a solid in the mixture in a proportion of 0.5 to 6%. The solid is insoluble in the polymer-monomer mixture and is preferably used in the form of a powder.

Examples of suitable solids include powdered zinc, activated alumina, chromium sesquioxide, iodine pentoxide, aluminium trioxide, zinc oxide, barium oxide, lead dioxide, calcium peroxide, calcium hydroxide, sodium carbonate, borax, sodium chloride, calcium sulphate and others. Some forty examples are given of the use of various solids with a number of polymer-monomer mixtures.

Adhesive Compositions

No. 834,548. Semtex Ltd. Inventors: W. Saul, I. G. Mumford and D. J. B. Robbins. Application, September 6 1955. Filed, June 6 1956. Published, May 11 1960.

An adhesive composition comprises essentially a mixture of a rubberlike diene-nitrile or diene-ketone copolymer, a phenol-aldehyde condensate capable of being cross-linked, a cross-linking agent for this condensate, and chlorinated rubber. The adhesive normally contains also vulcanizing ingredients and may contain plasticizers for the chlorinated rubber. It may be applied in the form of a thin solid layer or in the form of a solution. After application, the adhesive is heated to effect vulcanization of the rubber and cross-linking of the phenol-aldehyde condensate.

The adhesive is particularly suitable for bonding PVC sheeting to rubber sheeting to form a flooring material in which the PVC is the top wearing layer. The rubber sheeting, in the unvulcanized condition, is assembled with the PVC sheeting with a layer of the adhesive between the two sheets, and the assembly is then vulcanized, conveniently by means of a continuous vulcanizer of the Rotocure type. In one example, the adhesive comprised 252.5 parts of nitrile rubber, 126.25 parts of xylenol-formaldehyde resin and 193.0 parts of chlorinated rubber, together with vulcanizing ingredients, cross-linking agent, plasticizer, filler and solvent.

Cellular Polymer Bodies

No. 837,723. The Dow Chemical Co. Application and Filed, June 13 1958. Application in USA, August 28 1957. Published, June 15 1960.

Cellular polythene is made by mixing with polythene 0.05 to 0.702g. molecular proportion of 1,2-dichlorotetrafluoroethane per 100g. of polythene, heating the mixture at 90° to 200°C. under pressure to form a flowable gel and then extruding the gel into a zone of lower pressure whereby the extruded material expands to form a cellular body. The process may be applied also to the production of cellular bodies from polypropylene and other polymers of aliphatic mono-olefins, or copolymers of mono-olefins with certain other monomers, although polythene and polypropylene are the preferred polymers. The production of cellular polythene and cellular polypropylene is described in examples.

Shorter Abstracts

Models for Use in Photoelastic Investigations. 832,089. J. Dvorak and J. Majer. Filed, January 29 1957.—Transparent or translucent polymers of unsaturated esters, such as polymerized benzylmethacrylate, are used for constructing models for use in photoelastic investigations. Requirements for the refractive index and photoelastic constant of the polymers used are specified.

Flash Removal. 832,738. Bendix Aviation Corporation. Filed, January 24 1958.—Flash located in a passage in a rubber or other article combustible by heat is removed by heating the flash, as by a gas flame, the article itself being shielded from the source of heat.

Polymeric Material. 833,002. Imperial Chemical Industries Ltd. Filed. December 4 1957. — A polymeric material is made by polymerizing methyl methacrylate in the presence of a styrene-acrylonitrile copolymer. Thermoplastic moulding compositions are made by blending the polymeric material with a rubbery homopolymer or copolymer of butadiene.

Counter and Table Top Material. 833,593. The General Tire and Rubber Co. Filed, October 14 1957.—A sheet material suitable for finishing counter and table tops and resistant to heat and staining comprises an upper layer of polythene terephthalate, an intermediate layer of PVC or vinyl chloride copolymer and a lower layer of a metal or alloy, the intermediate layer being relatively thick compared with the upper and lower layers.

Stabilized PVC. 833,618. Ferro Chemical Corporation. Filed, February 25 1958.—PVC and other vinyl resins containing chlorine are stabilized against the deleterious effects of heat by incorporating 0.1 to 20 parts of a mixed aryl-alkyl phosphite ester in 100 parts of the resin.

Epoxy Resin Compositions. 833,734. Henkel and Cie. Gmbh. Filed, June 20 1957.—Ground vulcanized rubber, such as ebonite dust, is used as a filler for epoxy resin sealing compounds.

Stabilized PVC. 833,853. Ferro Chemical Corporation. Filed, April 22 1958.—PVC and other vinyl resins containing halogen are stabilized against the deleterious effects of heat by incorporating 0.1 to 10 parts of an acidic borate ester of a polyhydric alcohol in 100 parts of the resin.

Polyether Polymers. 834,158. E. I. du Pont de Nemours and Co. Filed, March 3 1958. — Polyalkylene-ether polymers are made by polymerizing a mixture of tetrahydrofuran and an oxirane or oxetane of a specified general formula. The polymers are vulcanizable with sulphur to form elastomeric products.

Stabilized Polythene. 837,619. Farbwerke Hoechst AG. Filed, December 17 1956.—Polythene is stabilized by the addition of a small proportion of an aromatic thiol, preferably a terpene substituted aromatic thiol, or a terpene thiol or naphthene thiol, the thiol having a molecular weight of at least 150.

Bags made from Densothene high density polythene film are being used to pack kipper fillets marketed by Mac Fisheries. They are made from film extruded and converted by the Plastics Group of Metal Box using British Resin Products' Rigidex Type 3

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

TAKE-OVER deals — new issues. These have been the two main items that have kept investors alive over the past few weeks. Elsewhere share prices for the best part have remained very much under the influences of summertime holidays. Only now and again has a company news item caused a flutter or so. But in spite of this lethargy the tone has kept steady enough, and here in London investors have shrugged aside the see-saw performance of the Dow Jones index on Wall Street. Recent news of full employment plus the good showing of the gold reserve figures at least managed to keep most of the top favourites on the up line. Some you will see from our table below did, in actual fact, manage to notch up new 'highs' for the year. Among these were BAKELITE, DE LA RUE DISTILLERS, PLASTIC ENGINEERS, STOREY BROTHERS, UNIVERSAL ASBESTOS and DAVID BRIDGE. Overall, however, business has been dull and uninteresting with day to day movements for best part small and irregular. The outlook? For the rest of the month, anyway, remaining quiet but with the occasional shaft of sunlight here and there. But this might be interwoven with the odd cloudy period and the two important factors to pay close attention to will be international political developments and Wall Street. Either alone or together these are big enough factors to set the warning signals flicking again.

BRITISH INDUSTRIAL PLASTICS have announced that along with the Borden Company of the USA, a new concern has been formed in Mexico to make amino moulding compounds (*RJIP* August 6, 192). Arrangements were worked out by the British group and the Borden Chemical Company, a division of Borden. In line with present policy of the country's government Mexican capital is being invited to join in the new venture. The jointly owned firm will be known as MATERIALES MOLDEABLES S.A. DE C.V., with an initial capacity of 1,000 tons of amino moulding compounds per year according to the BIP Chairman, Mr C. H. Glassey. BIP will be responsible for designing the new plant and for supplying original and continuing 'know how' in its operation.

Another Anglo-American partnership, this time between the ROYAL DUTCH-SHELL group and the NATIONAL DISTILLERS AND CHEMICAL CORPORATION disclosed that they were preparing to enter into the production of finished plastics materials (*RJIP* August 6, 192).

On present practice Shell would merely make polyolefins for sale to

Continued on page 249

Share Price Movements

Par Value	Company	1960 High	Low	July 30	Latest
£1	A.E. Ind. Ord.	67/–	49/6	50/6	50/3
5/-	Albright & W. Ord.	31/9	25/9	30/10½	31/6
£1	" " " 5% Pref.	17/3	15/6	15/6	15/6
5/-	Anchor Chemical Ord.	18/7½	14/9	15/3	16/3
5/-	Andersons Rub. Ord.	—	—	3/1½	3/1½
£1	Angus Geo. Ord.	47/6	34/9	45/6	46/1½
5/-	Ault & Wiborg Ord.	25/–	20/–	24/6	24/6
£1	Avon India Rubber Ord.	46/6	35/–	35/–	35/–
£1	" " " 6% Pref.	20/–	17/6	18/9	18/9
10/-	Bakelite Ord.	62/6	39/9	60/9	62/6
£1	" 6% Pref.	19/–	16/9	19/–	19/–
£1	Baker Perkins Ord.	43/3	40/–	40/3	40/–
4/-	Bank Bdg. Rubber Ord.	4/3	2/3	4/3	4/3
4/-	Brammer H. Ord.	18/6	16/9	18/6	18/6
10/-	Bridge, David Ord.	65/–	53/6	62/6	65/–
5/-	Bright, John Ord.	18/6	15/3	17/3	17/3
5/-	Brit. Blting. & Asb. Ord.	—	—	17/–	17/–
£1	" " " Pref.	—	—	17/3	17/3
2/-	Brit. Ind. Plas. Ord.	12/1½	5/3	10/7½	10/–
2/-	" 10% (tax free) Pref.	4/9	4/3	4/9	4/9
£1	British Xylonite Ord.	110/–	78/9	105/–	102/–
£1	" " 5% Pref.	18/9	15/–	15/–	18/7½
£1	BICC Ord.	61/3	49/9	50/9	51/–
5/-	BTR Ind. Ord.	17/3	9/9	15/9	17/1½
£1	" " 7½% Pref.	24/3	23/–	23/9	23/9
£1	Courtaulds Ord.	54/3	44/3xc	71/9	53/6xc
£1	" 5% 1st Pref.	17/9	16/3	16/6	16/3
£1	" 6% 2nd Pref.	21/–	19/–	19/3	19/3
4/-	Cow, P. B. Ord.	9/6	6/9	9/1½	8/9
£1	" " 5% Pref.	15/6	14/–	14/–	14/–
1/-	Dannimac Mfg. Ord.	12/9	9/–	9/6	9/–
10/-	De La Rue Ord.	87/9	65/6	85/–	87/9
£1	" " " 3½% Pref.	12/–	10/6	10/9	10/6
10/-	Distillers Co. Ord.	41/3	32/9	40/4½	41/3
£1	" " 6% Pref.	22/–	19/6	20/–	20/–
£100	" 5% Conv. Loan	£96	£95	£96	£95
£100	" 5½% Unsec. Loan	£97	£87½	£87½	£87½
10/-	Dunlop Rubber Ord.	28/3	21/9	27/1½	26/6
£1	" " 5½% Pref.	19/–	16/6	16/9	16/6
£100	" 3½% 1st Debs.	£78	£68	£68	£68
£100	" 4½% 2nd Debs.	£87	£80	£80	£80
£1	Eng. Elect. Ord.	53/6	36/3	38/–	39/3
4/-	Ebonite Cont. Ord.	14/3	11/–	11/3	11/–
£1	English China Clays Ord.	95/–	74/6	88/–	88/6
£1	Goodyear Tyre 4% Pref.	12/9	10/9	10/9	11/–
5/-	Greeff Chem. Ord.	35/–	23/6	25/–	23/6
10/-	Greeff Chem. 5½% Pref.	9/–	8/6	8/9	8/9

Par Value	Company	1960 High	Low	July 30	Latest
5/-	Hackbridge Hldg.	17/6	14/3	14/3	14/9
4/-	Greengate & Irwell Ord.	6/6	5/3	6/3	5/9
£1	Harrisons & Crosfield Dd.	64/–	49/6	50/9	51/3
1/-	Hunt & Moscrop Ord.	2/9	1/9	2/–	2/–
£1	Imp. Chem. Ord.	65/–	56/6	64/4½	64/9
£1	" " 5% Pref.	18/–	16/3	16/6	16/3
£100	" 4½% Unsec. Loan	£89½	£81	£83	£81½
£100	" 5½% Conv. Loan	£212½	£90xc	£210	£90½xc
1/-	Kleemann (O. & M.) Ord.	11/–	8/3	10/7½	10/9
£1	" " 6½% Pref.	19/–	17/–	17/6	17/6
2/-	Lacrinoid Prod. Ord.	5/–	3/–	3/10½	3/10½
5/-	Laporte Ind. Ord.	32/–	25/3	27/6	28/4½
£1	" " 7½% Pref.	24/3	23/3	23/9	23/9
£1	Leyland & Birm. Rubber Ord.	57/–	46/3	51/3	51/3
£1	" " " 6% Pref.	19/–	17/6	18/9	18/9
2/-	London Rubber	14/9	11/–	13/–	13/–
£1	" 6% Red. Cum. Pref.	20/–	18/9	18/9	18/9
£1	McKechnie Bros. Ord.	71/6	57/–	60/–	60/–
£1	" " 'A' Ord.	69/3	56/–	56/3	56/3
£1	" " 6% Cum. Pref.	18/–	16/–	17/–	17/–
5/-	Monsanto Chem. Ord.	28/–	23/3	26/3	26/3
£1	" " 3¾% Pref.	12/9	12/–	12/6	12/6
£100	" " 6% Debs.	£103½	£98	£100	£99
5/-	Miles (H.G.) Holdgs. Ord.	11/3	9/9	10/9	10/9
£1	North British Rubber	21/3	16/6	17/4½	16/6
—	Northwestern Rubber	—	—	—	11/9
5/-	Plastic Enginrs. Ord.	26/3	20/–	25/–	26/3
5/-	Redfern Holdings Ord.	5/9	4/3	5/3	5/3
2/-	RFD Ltd. Ord.	6/6	4/10½	4/9	4/9
£1	" " 5½% Pref.	14/6	12/9	13/–	13/–
2/-	Rubber Imp. Ord.	7/9	4/6	4/6	4/6
2/-	" " 'A' Ord.	7/–	3/3	3/6	3/6
£1	" " 5% 1st Pref.	15/–	11/3	12/3	12/3
5/-	Rubber Reg. Ord.	19/3	17/–	17/6	17/–
4/-	Shaw Francis Ord.	27/6	21/3	21/3	23/–
2/-	Silentbloc Ord.	13/3	10/–	10/9	10/9
5/-	Storey Bros.	39/6	28/3	37/–	39/3
2/-	Sussex Rubber Ord.	2/3	1/3	2/–	2/–
5/-	Sutcliffe Speak Ord.	15/9	11/–	13/9	13/6
£1	Turner & Newall Ord.	115/–	100/–	103/9	104/–
£1	" " " 7% Pref.	25/–	22/3	22/3	22/6
5/-	Universal Asbestos Ord.	50/–	32/6	49/–	49/9
5/-	Viscose Dev. Ord.	16/6	14/9	16/3	16/–
5/-	Warne W. (Holdgs.) Ord.	18/9	15/3xc	15/6	16/–

Rubber Markets

LONDON

Following the East, prices failed to maintain interim steadiness and resumed a sagging trend in a dull market. Terminal business was small and thinly spread. Spasmodic and selective interest was shown in cif parcels, chiefly the lower grades. Discounted prices for 'near' rubber reflected increased availability of supplies.

Latest prices are as follows:

No. 1 RSS Spot: 29⅞d.-30⅛d.

Settlement House:
September 29⅞d.-30⅛d.
October/December 30d.-30⅛d.
January/March 29⅛d.-30d.
April/June 29⅛d.-29⅜d.
July/September 29⅛d.-29⅜d.

No. 1 RSS cif basis ports:
August 30d.-30⅛d.
September 30⅛d.-30⅜d.
October 30⅛d.-30⅜d.

Godown:
August 103⅛ Straits cents nominal.

LATEX

Centrifuged 60% latex per gallon in drums, seller, September, October, 17s. 7d., cif European ports. Spot, seller, 18s. 3d. Bulk, nominal, d.w. 17s. 3d. August. Creamed, seller, nominal, 17s. 3d. September, October. Normal, seller, September, 14s. 10d.

BANGKOK

No. 1 RSS

The price of No. 1 RSS at Bangkok on August 8 was 33.75 (34.00) US cents per lb.

SINGAPORE

The market ruled dull throughout the morning of August 8. There was some interest in lower sheet but sellers were reserved. Quiet conditions prevailed in the afternoon. Some small buying, particularly of lower sheet, was reported and the market steadied slightly. After hours, the market was steady.

	Malayan cents per lb., fob Malayan ports to open ports	
	August 8	Prev. Close
No. 1 RSS, Aug.	104⅜–105	104⅜–104½
Sept.	105⅛–106	105⅛–105½
No. 2 RSS, Aug.	104⅛–104½	103⅞–104⅛
No. 3 RSS, Aug.	103⅞–104	102⅞–103⅜
No. 4 RSS, Aug.	102½–103½	102 –103
No. 5 RSS, Aug.	99 –100	98½– 99½
No. 1 RSS, Spot	104½–105	104½–104⅝ nominal
No. 3 blanket thick remilled crepe.. ..	97 – 98	97½– 98½
No. 1 fine pale crepe.. ..	114 –115½	114½–116½
2x thin brown crepe.. ..	94½– 95½	95 – 96

Tone: Steady

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums, fob at 200.20d. per gallon.

CEYLON

No. 1 RSS

The price of No. 1 RSS at Colombo on August 8 was 116 (115½) Ceylon cents per lb.

NEW YORK

The New York rubber market ruled as under on August 8:

DEALERS' PRICES

	US cents per lb. ex-dock	
	Aug. 8	Previous
No. 1 RSS, Aug. ..	37⅛n	37⅛n
Sept. ..	37n	36⅞n
No. 2 RSS, Aug. ..	37⅛n	37⅛n
Sept. ..	36⅞n	36⅞n
No. 3 RSS, Aug. ..	37⅛n	37n
Sept. ..	36⅞n	36⅝n
No. 1 RSS, Spot ..	38n	37⅝n
No. 3 amber blanket crepe, Oct. ..	32⅛n	32⅛n
No. 1 latex thin crepe, Aug.	38⅛n	38⅛n
No. 1 latex thick crepe, Aug.	38⅛n	38⅛n

FUTURES—REX CONTRACT

	Closing	Previous Close
Sept. ..	37.40–37.38t	36.75b–36.85a
Nov. ..	36.10b–36.25a	35.85t
Jan. ..	35.60b–35.90a	35.30b–35.40a
March ..	35.15b–35.40a	34.85b–35.15a
May ..	34.90b–35.20a	34.65b–34.85a
July ..	34.50b–34.80a	34.30b–34.55a
Sept. ..	34.20b–34.50a	34.10b–34.35a

Sales: 19. Tone: Firm.

Rubber futures after early softness on August 8 firmed on stop-loss covering in very thin trading. Physical rubber was quiet. The undertone was steady. Futures held firm later in the day. Traders said that slight amber business was done in the shipment market today at steady prices.

AMSTERDAM

The Amsterdam rubber market ruled as under on August 8:

	Guilders per kilo	
No. 1 RMA	Aug. 8	Previous
August	2.96½	2.95
September	2.96	2.95
October	2.96	2.96
November	2.95½	2.95
December	2.94½	2.94
Oct./Dec.	2.96	2.95

Sales: 60. Tendency: Steady

DJAKARTA

Very quiet conditions prevailed on August 8. At noon, buyers were still reserved. Only three tons of sheet No. 1 for ready delivery were sold at 37.50 rupiahs per kilo. The market remained very quiet at the close.

	Rupiahs per kilo	
	Aug. 8	Prev.
Spot No. 1 priok ..	37.00b	37.25b
Spot No. 2 priok ..	36.00b	36.25b
Spot No. 3 priok ..	33.50b	33.75b
No. 1 fine pale crepe, spot	37.00b	37.25b

Tone: Very Quiet

STOCK MARKET

Continued from page 248

manufacturers who would then process these materials. But the group has now said that a joint company is to be formed which will share equally in the development of 'plans for the production and marketing of polyolefin film and plastic packaging materials outside the US and Canada.' NATIONAL DISTILLERS is one of the world's large producers of polythene and it owns KORDITE, a leading US maker of plastic film for packaging. The new business will be run from London and will be headed by Dr W. L. J. DeNie currently a senior executive of Shell Development Co. Neither the name of the proposed company nor its initial capital have yet been decided. The venture is, in fact, in its earliest stages and one of the primary jobs will presumably be to determine which particular finished products to produce and where to produce them.

Shares of the COURTAULDS combine were quoted for the first time on the Paris Bourse and on the first day of trading last Wednesday leaders said that 35,000 shares changed hands.

ANCHOR CHEMICAL sent word that the halftime dividend was going up from an equivalent of 3½% to 6% in order to bring the interim and final dividend into closer relationship. The total equal to 13½% on the present capital has increased by 50% share bonus paid for 1958-59. Group profit for six months ended May 31 1960 worked out at £125,900 against £76,900 for the corresponding period last year. Chairman Mr T. Martin said that both home and export sales have increased abnormally for the six months of the year compared with the same period a year ago. He added that the second half of the trading year normally results in lower figures.

Receiverships — Release

J. G. Ingram and Son Ltd. (145,490), London India Rubber Works, Hackney Wick, E.9.—Charles E. M. Emmerson, of 28 King Street, E.C.2, ceased to act as Receiver and/or manager on July 8 1960.

PI Southern Section

The secretary of the Southern section of the Plastics Institute for the session 1960/61 is W. J. H. Eckstein (Follands Ltd.), and not, as previously reported (*RJIP* July 23, 134), Mrs C. E. Williams.

Nigerian Rubber

The price of rubber for August 1960, for the purpose of assessing values of export duties will be 35.46d. per lb. against 36.15d. for July.

Industry INTELLIGENCE

Machines, Materials and Equipment

New Tool Clamp

A new design of toolmakers' clamp is more versatile than the conventional clamp and can save time in use. It can be adjusted to any opening by sliding the moving jaw on a cylindrical bar. Having adjusted the clamp in this way to fit the workpiece, it is tightened by a knurled screw, which applies pressure to the upper face of the workpiece, through a crescent-shaped hardened pad, which is self-aligning to irregular or non-parallel surfaces. The fixed jaw has a flat ground base which will stand on a machine table.

Micromanipulator

A new form of micromanipulator has been developed, primarily for use in dissection work under a medium powered microscope; it should be useful for other applications calling for very fine manipulations with damping out of any hand tremors.

The tool holder is supported by a ball and socket joint, which affords it freedom to rotate and to move in all directions. The weight of the tool is roughly counterbalanced by a brass weight screwed to the upper end of the rod, and this end of the rod is immersed in a can filled with vaseline, which forms an effective dash pot. Besides damping out small tremors, vaseline has the property that it tends to 'set' when undisturbed, so that it prevents drift of the tool under the effect of gravity when the hand is taken away.

Pitch Circle Drill Jig

A universal jig has been introduced to facilitate the precision drilling of equidistant holes round a circle. Its use obviates the loss of time involved in marking out work, or preparing special jigs for 'one off' or small batch production. Work is held in a four jaw self-centring chuck (which will accommodate irregularly shaped work), which can be rotated under the control of an accurate dividing mechanism which normally allows up to 72 divisions. A cross-bar carries a drill bush carrier, and datum faces on the cross-bar and the carrier allows the drill to be set at any desired pitch radius by the insertion of slip gauges.

Pure Water

The Mark 6 Portable 'Deminrolit' designed and manufactured by Permutit Co. Ltd., can convert up to 12 gallons hourly of clean cold water into demineralized water having a conductivity of less than 1.0 reciprocal megohm per centimetre. The quality of water produced by the unit conforms to the 'Purified Water' standard of the British Pharmacopoeia, 1958.

The unit is designed for simple and reliable regeneration on the spot. A conductivity tester is fitted which continuously monitors treated water quality. Constructed as a free-standing unit of robust, non-corrodible construction throughout, the Mark 6 Portable 'Deminrolit' is suitable for workshop as well as laboratory conditions. No expensive plumbing is necessary, the unit being connected by flexible hose.

Publications

RABRM Accelerator Circular

The Research Association of British Rubber Manufacturers information circular No. 449, circulation of which is restricted to members of the association, their staffs, and UK Government Departments, is called Accelerator Trade Marks. This contains three lists: an alphabetical list of accelerator trade-marks and brand names, with chemical nature and suppliers; alphabetical list of chemical substances and corresponding trade-marks; and names and addresses of manufacturers and suppliers. It is hoped to publish in the future similar lists giving information on activators and retarders, antioxidants and antiozonants, blowing agents, plasticizers and stabilizers.

RABRM Library

Selected additions to the RABRM library are listed in a recent publication designated Vol. 36, No. 6. These are separated into 31 categories, and with few exceptions are available to members of the association in the UK on loan free of charge. Some of the main categories are general, planting, latex, crude natural rubber, synthetic rubbers, polymers and copolymers, compounding ingredients, vulcanized natural rubber, cables and insulation, mechanical goods, machinery and appliances, organization, associations and statistics.

Philprene Polymers

The Phillips Chemical Company has recently issued a booklet called Philprene Polymers. This colourful publication, suitably illustrated on every page with drawings of a character whose body and limbs are rubber tensile-test pieces, supplies in concise form technical data and practical compound information on the Philprene synthetic rubbers. These include hot and cold types pigmented, non-pigmented, oil-extended and many special types such as low water absorption polymers for the wire and cable industry. Each page is devoted to one polymer and gives a description of the polymer, specifications uncompounded and compounded test stock, and remarks listing the most suitable applications.

Retread Cementing

Bulletin No. 10, 'Retread Cementing,' is the latest in a series of educational bulletins published by the Rubber Manufacturers Association, 444 Madison Avenue, New York City. This new bulletin contains instructions for using both spray type and brush type vulcanizing cement and includes hints for most efficiently cementing tyre bodies for retreading. Single copies can be obtained from the Association at no charge.

Export Opportunities

Rubber Sheeting for Canada

BTR Industries (Canada) Ltd. want UK offers for rubber sheeting (or packing) supplied in rolls 36in. wide, about 200lb. or 30ft. to the roll, in various thicknesses, *e.g.* $\frac{1}{16}$in., $\frac{1}{8}$in., $\frac{3}{16}$in., $\frac{1}{4}$in. (also 'insertions' — similar material but laminated, a textile 'Sandwich').

The local Canadian market price is 25 cents a lb.

Suppliers should write direct to J. C. Cahill, BTR Industries (Canada) Ltd., 77 Sheffield Street, Toronto 15, notifying the UK Trade Commissioner, 119 Adelaide Street West, Toronto, that they have done so. (ESB 18296/60.)

Aprons and Boots for Germany

Herr Franz Walter Moke, Hochstrasse 16, Munich 9, wishes to represent a UK manufacturer of butcher's rubber aprons and rubber boots.

Manufacturers interested should write direct and also notify the British Consulate-General, Akademiestrasse 7-9 Munich. (Ref. ESB/20256/60.)

Kitchen Goods for the Philippines

Del Rosario Brothers Marketing Corporation, P.O. Box 1655, Manila, wish to buy from UK suppliers kitchen utensils and household ware of plastics and polythene, and chair coverings, particularly those made wholly or partly of synthetic materials.

Manufacturers interested should write direct to the Corporation, marking letters for the attention of Mr Anacleto Del Rosario. Export price lists should preferably be quoted in US dollars, cif (or C. and F.) Manila, together with samples where possible. A copy of initial correspondence should be sent to the Commercial Section, British Embassy, Hong Kong and Shanghai Bank Building, 35 Juan Luna, Manila. (Ref. ESB 17593/60.)

Enquiries should be addressed to the Board of Trade, Export Services Branch, Theobalds Road, W.C.1, unless otherwise stated.

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

PERMALINK (797,024) Compounds of polyvinylchloride and polymeric plasticisers, being chemical substances for use in the plasticising and compounding of coatings made of plastics. John Henry Lawrence Briggs, Commercial Street, Knott Mill, Manchester 15. (Class 1; May 17 1960).

DUPOK (799,314) Synthetic resins and chemical products containing resins, all being goods for industrial use; and adhesives included in Class 1. Dussek Bitumen and Taroleum Ltd., Empress Wharf, Bromley-by-Bow, London, E.3. (Class 1; May 17 1960).

Box

(B796,789). Shampoos for use in cleaning carpets, rugs, upholstery and the like goods. The British Xylonite Co. Ltd., Highams Park, London, E.4. (Class 3; May 17 1960).

CONTAP (800,248) Belts and belting, all for machinery. Andre Rubber Co. Ltd., Kingston By-pass, Surbiton, Surrey. (Class 7; May 17 1960).

RAINBOW (B773,815) Records for talking machines. Everest Plastics Ltd., 45-46 Morley House, 320 Regent Street, London, W.1. (Class 9; May 17 1960).

FORTIPLAS (800,047) All goods included in Class 11 made wholly or principally of plastics. Thermo Plastics Ltd., Luton Road Works, Luton Road, Dunstable, Bedfordshire. (Class 11; May 17 1960).

ULON (794,838) Parts included in Class 12 of land vehicles, watercraft and aircraft, being goods made of abrasion resistant plastics. Unitex Ltd., 19 Halfpenny Lane, Knaresborough, Yorkshire; Manufacturers. (Class 12; May 17 1960).

AGFAFOL (796,682) Foils of plastics for use in graphic reproduction processes (other than photographic). Agfa A.G., Leverkusen-Bayerwerk, Germany. Address for service is c/o Abel and Imray, Quality House, Quality Court, Chancery Lane, London, W.C.S. (Class 16; May 17 1960).

TOOTAL (796,148) Non-flexible plastics in sheet form, tubes and pipes, all included in Class 17, and tanks (not parts of installations or of machines or motors) made of plastics. Thermoplastics Ltd., Luton Road Works, Dunstable, Bedfordshire. Manufacturers and Merchants. (Class 17; May 17 1960).

ANCON (800,247) Articles made from rubber or synthetic rubber and included in Class 17. Andre Rubber Co. Ltd., Kingston By-pass, Surbiton, Surrey. (Class 17; May 17 1960).

B795,052) All goods included in Class 17, made of rubber. Westland Gummiwerke G.m.b.H. Address for service is c/o Brewer and Son, 5/9 Quality Court, Chancery Lane, London, W.C.2. (Class 17; May 17 1960).

DUPOK (799,316) Plastics included in Class 17; materials for hermetically sealing, packing (jointing), stopping or insulating. Dussek Bitumen and Taroleum Ltd., Empress Wharf, Bromley-by-Bow, London, E.3. (Class 17; May 17 1960).

HYDROCOR (799,557) Non-metallic materials for use in making, filling or sealing joints in building or civil engineering construction. Expandite Ltd., Chase Road, London, N.W.10. (Class 19; May 17 1960).

SPRING AIR (787,660) Containers included in Class 21 (sold empty), being goods adapted to dispense their contents in aerosol form. Saga (Plastics) Ltd., Gay Works, 2b Brownlow Road, London, E.8. (Class 21; May 19 1960).

NEW COMPANIES

Celsur Plastics Ltd. (663,439).—June 28. Capital: £100 in £1 shares. The directors are: William R. Salton and Betty E. Salton, both of 57 Warwick Avenue, Thorpe Lea, Egham, Surrey. Regd. office: 77a St. Marks Road, W.7.

Rushden Granulating Co. Ltd. (663,418). —June 27. Capital: £2,000 in £1 shares. To carry on the business of shredders, pulpers and granulators and manufacturers of all kinds of leather, rubber plastics, etc. Solicitors: Wilson and Wilson, 135 High Street, Rushden.

Quilt-o-Pad Ltd. (663,725). — June 30. Capital: £100 in £1 shares. To carry on the business of workers in plastics, etc. The directors are: Terence H. Godsmark, 53 Venner Road, S.E.26; James W. H. Channer, 40 Mayford Road, S.W.12. Regd. office: 134/146 Curtain Road, E.C.2.

R.N.S. Products Ltd. (663,835).—June 30. Capital: £1,000 in £1 shares. To carry on the business of manufacturers and dealers in plastic and leather goods of all kinds, etc. The directors are: Reuben Cohen and Nina H. Cohen, both of 67 Gresham Gardens, N.W.11. Regd. office: Devonshire Chambers, 146 Bishopsgate, E.C.2.

Ceilon Acoustics Ltd. (663,869).—June 30. Capital: £100 in £1 shares. To carry on the business of makers and developers of polyurethane plastics and synthetic substances and the development of polyesters or other materials to be used in relation to acoustics, etc. The permanent directors are: Edward T. Reade and Betty Reade, both of 63 Grange Park, Wilmslow. Secretary: Betty Reade. Regd. office: 32 Kennedy Street, Manchester 2.

Abosplass Ltd. (664,128). — July 4. Capital: £100 in £1 shares. To carry on the business of plastic manufacturers, etc. The subscribers (each with one share) are: Jean Herbert, company director and Thomes A. Herbert, barrister, both of 156 Strand, W.C.2.

Plastiglide Products Ltd. (664,085).— July 4. Capital: £5,000 in £1 (3,000 'A' and 2,000 'B') shares. To carry on the business of manufacturers of and dealers in any article or component made of any type of metal or plastic material, etc. Solicitors: Reynolds and Co., 10 Newhall Street, Birmingham 3.

Pearson Bros. (Littlehampton) Ltd. (663,822).—June 30. Capital: £2,000 in £1 shares. To carry on the business of moulders and workers in fibre glass, plastic, glass, china, wood and any composite substances, designers and builders of and dealers in motor and other boats, etc. The directors are: Eric A. Pearson, Orchard Cottage, Church Lane, Eastergate, Sussex; Arthur R. Pearson, St. Agnes, Horne Lane, Rustington, Sussex. Regd. office: 47 River Road, Littlehampton, Sussex.

Nuttall, Stock and Co. Ltd. (663,955).— July 1. Capital: £100 in £1 shares. To carry on the business of pattern making, including work for chemical, plastic and engineering industries, etc. The directors are: Derek Nuttall and Mrs. Bernice Nuttall, both of 5 Penrith Street, Rochdale. Regd. office: 5 Penrith Street, Rochdale.

J. F. Bell and Co. (Aycliffe) Ltd. (664,006).—July 1. Capital: £1,000 in £1 shares. To carry on the business of manufacturers, processors, factors, stockists, wholesalers and repairers of rubber and plastic materials, etc. The directors are: John F. Bell, East Panncards, West Denton, Newcastle upon Tyne 5; Thomas Reed, 2 Stanfield Road, Newton Aycliffe, Co. Durham. Solicitors: Dees and Thompson, Newcastle upon Tyne 1. Regd. office: 10/HA/3 Avenue O, Aycliffe Industrial Estate, Aycliffe, Co. Durham.

Quentsplass Ltd. (664,350). — July 6. Capital: £100 in £1 shares. To carry on business of manufacturers of and dealers in plastic materials, etc. The subscribers are: Jean Herbert, company director, and Thomas A. Herbert, barrister, both of 156 Strand, W.C.2.

Liquidators Appointed

Suarez and Co., 7 Great Winchester Street, E.C.2.—Rubber growers and merchants.

Kalidjerock Rubber Co. Ltd., 5 Fenchurch Street, E.C.3.—Rubber growers.

E.V.B. Plastics Ltd., 18 Maddox Street, W.1.—Moulders.

PATENT LIST

Printed copies of the Specifications in the following list, published by permission of the Controller of H.M. Stationery Office, can be obtained from the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d., including postage.

COMPLETE SPECIFICATIONS ACCEPTED

Open to public inspection on July 27 1960

Semtex Ltd. Manufacture of articles made of reinforced synthetic resin composition. 842,601.

C. Landsman. Treatment of synthetic fibre fabrics. 842,857.

Minnesota Mining and Manufacturing Co. Epoxy resin compositions. 842,867.

Monsanto Chemical Co. Stabilization of olefinic polymers. 842,872.

Sequoia Process Corporation. Process for the treatment of polyethylene. 842,873.

F. W. Brady. Pressure sensitive adhesive tape article. 842,617.

Hercules Powder Co. Partially saponified reaction products of rosin and an α- ethylenically unsaturated diabasic aliphatic acid or anhydride. 842,885.

Monsanto Chemical Co. Production of shaped foamed thermoplastic bodies. 842,369.

Ciba Ltd. Process for dyeing with pigments and synthetic resin compositions suitable therefor. 842,727.

Glazex Products Ltd. Appliances for spraying paint or the like. 842,730.

Ciba Ltd. Process for dyeing with pigments and synthetic resin compositions suitable therefor. 842,728.

Vianova Kunstharz A.G. Process for producing aqueous stoving varnishes. 842,413.

Vianova Kunstharz A.G. Process for producing resinous compositions and aqueous stoving varnishes. 842,414.

Wacker-Chemie G.m.b.H. Process for the manufacture of vinyl ethers. 842,731.

Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius and Brüning. Manufacture of halogen-containing polyolefines. 842,416.

Hooker Electrochemical Co. Phenolic resin coating process. 842,632.

Owens-Corning Fiberglas Corporation. Mineral fibres coated with synthetic resins. 842,634.

Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius and Brüning. Process for reducing the inflammability of fibrous materials. 842,393.

Farbwerke Hoechst Aktiengesellschaft Vorm. Meister Lucius, and Brüning. Organic compounds of tin and a process for their manufacture. 842,639.

Pittsburgh Plate Glass Co. Resinous coating materials. 842,641.

Pittsburgh Plate Glass Co. Curing of interpolymerizable mixture. 842,900.

Farbenfabriken Bayer A.G. Process for the production of polymerizable polyesters and mixtures of these polyesters with polymizerable monomeric vinyl compounds. 842,264.

Plax Corporation. Sealable synthetic resinous article. 842,269.

Pirelli are producing this polythene watering can in four colours. It has spout and sprinkler attachments, and holds about 2 gallons

R·J·I·P

CLASSIFIED ADVERTISEMENTS

APPOINTMENTS VACANT

6d. a word. Minimum 10/-. Box 2/-.

A COMPANY in Lancashire manufacturing latex compounds is looking for a Chemist/Technologist of H.N.C. or L.I.R.I. standard, and with a knowledge of latex compounding, to fill a position as assistant to chief chemist. Apply giving details of qualifications and experience, to Managing Director. — Box 452. (452)

A SENIOR sales technician is required for seeking, initiating and assisting in the development of rubber and plastic products. The work is interesting and although primarily based in London, visits throughout Great Britain would be necessary. The technician will report up to Board level, and preferably should have both rubber and engineering qualifications. Four-figure salary, pension scheme. This is a senior position which offers scope for advancement and progressive salary increases.—Write in confidence, stating age, qualifications and previous experience, to Sales Director, William Warne & Co. Ltd., India Rubber Mills, Barking, Essex. (432)

COMPANY situated in Midlands requires Foreman for rapidly expanding extrusion department. Applicants must have sound knowledge of various types of rubber extrusions. Good salary.—Write stating age, experience, salary required to Box 454. (454)

PRODUCTION Manager wanted for the biggest factory specializing in the manufacture of rubber soles and heels in Scandinavia. Must have initiative and ability for co-operation. Commencing salary £1,500 yearly.—Apply, including photo, to Greyhound, Vandtaarnsvej 110-112, Soborg, Copenhagen, Denmark. (451)

VACANCY occurs for press shop chargehand on rotating shift work in rubber factory situated Middlesex. Generous salary to successful applicant. Experience of small mouldings and/or hot water bottles desirable.—Box 423. (423)

WELL-KNOWN automotive rubber parts, plastic and urathene foam manufacturer in Australia offers opportunities to Technical Executives and qualified technicians who have had considerable experience and background in these fields. Director visiting England in the next three weeks will interview applicants with suitable qualifications.—Box 449. (449)

Large organization to expand established business in

RUBBER AND RESIN BASED ADHESIVES

requires in London

a

TECHNICAL SALES SPECIALIST

to take responsibility for developing existing markets and seeking new outlets.

The successful candidates will have considerable experience in sales of adhesives to various industries and preferably should be a graduate—or of equivalent standard.

Salary commensurate with qualifications and experience at least £1,200 p.a., expenses, pension scheme, car. Excellent prospects.

Full career details to Box 447. (447)

BTR

MAJOR EXPANSION PROGRAMMES WILL INTEREST AMBITIOUS MEN:

BURTON-ON-TRENT

Increasing production requirements of specialised moulded and hand formed products for Aero and other industries create new vacancies for:

SUPERVISOR FOR PRECISION MOULDING (Ref. B/PM)

also

SUPERVISOR FOR HAND FORMING (Ref. B/HF)

Qualifications:

Technical Background.
Organising Ability and Practical Production outlook.
Initiative and Drive.
Inventive ability and interest in new techniques.
Experience in technical production or work study.

LEYLAND

Continually widening growth involves considerable development with application of new techniques necessitating the appointment of

SENIOR HOSE TECHNOLOGIST (Ref. L/HT)

Qualifications:

A.M.I.Mech.E. or General Science degree.
Experience in PNEUMATICS OR HYDRAULICS.
Inventive ability.

DEVELOPMENT ENGINEER/PHYSICIST (Ref. L/DT)

Engineer or Physicist to work on problems of design and manufacture of all types of hose, conveyor belting, etc.

Qualifications:

Degree in Engineering or Physics, A.M.I.Mech.E. or A.Inst.Physics.
Inquisitive mind and inventive ability.

Preferably experience of heat loss problems, pressure loss in hose and couplings, also stress analysis in hose, belting, roller coverings.

DESIGN DRAUGHTSMEN (Ref. L/ED)

Design Draughtsmen for MACHINE and EQUIPMENT Design. Experienced designers to devise special production equipment and improve existing equipment.

Qualifications:

Engineering degree, A.M.I.Mech.E. or at least H.N.C.
Experience in rubber industry, preferably in similar tasks.
Inventive ability.

LONDON

SENIOR DESIGNER—COUPLINGS (Ref. H/C)

To design hose assemblies including couplings, end fittings, etc., for special purposes.

Qualifications:

Engineering degree, A.M.I.Mech.E. or at least H.N.C.
Experience in PNEUMATICS and HYDRAULICS.
Inventive ability.

MOULD DESIGNER (Ref. S/M)

To be responsible for DESIGN and MANUFACTURE of MOULDS and DIES for rubber, ebonite and plastics processes.

Qualifications:

A.M.I.Mech.E. or at least H.N.C.
Considerable similar experience.
Inventive ability.
Organising ability and practical production outlook.

FIELD INVESTIGATOR (Ref. D/R)

Engineer or technologist to undertake MARKET INVESTIGATION including technical and economic aspects, primarily on new industrial products.

Qualifications:

Engineering or Science degree, A.M.I.Mech.E., A.I.R.I. or A.P.I., etc.
Preferably knowledge of Rubber and/or Plastics industries.
Ability to present clear and concise reports.

The Company offers:

HIGH SALARIES, commensurate with qualifications and experience.
EXCELLENT PROSPECTS of promotion.
EDUCATION AND TRAINING—positive encouragement with further studies.
GOOD PENSION AND BENEFIT SCHEMES.
HOLIDAYS rising from 3 weeks after one year.
MEALS—canteens or Luncheon Vouchers.

Send full tabulated details of education and experience, also advertisement reference to: GROUP PERSONNEL OFFICER

BTR Industries Ltd

HERGA HOUSE, VINCENT SQUARE, LONDON S.W.1

(c.55)

APPOINTMENTS VACANT

THE DISTILLERS COMPANY LIMITED

PUBLICITY ASSISTANT

The Plastics Group of The Distillers Company Limited wish to appoint a Publicity Assistant in the Publicity and Information Department at their London Head Office.

The successful candidate will in the first instance be engaged in publicity work covering one of the ranges of materials manufactured by the Group. He will be expected to prepare publicity material for the press and other media, collecting and using information from both inside and outside the organisation—and also to collaborate closely with advertising agents.

Candidates for this post, preferably aged not over 30, must have an ability to write convincingly, having a genuine feeling for words and language. They must also be men of energy and positive personality who can maintain sympathetic contact at all levels. Some previous experience in advertising and/or publicity and/or writing is required, together with some evidence of organising ability. Candidates who also possess a knowledge of plastics will be preferred. Graduate qualifications in arts or sciences would be an advantage, but are not essential.

Candidates should write, giving age, details of education and experience, to:

STAFF MANAGER
THE DISTILLERS COMPANY LIMITED
21-22 BOLTON STREET
LONDON, W.1.

Quote Ref: 82/60.R.J.

(445)

WELL-KNOWN medium-sized machinery company in London has interesting vacancy for a young technologist for the promotion of sales of plastics processing equipment. Knowledge of thermo-plastics and of some mechanical engineering as well as willingness to travel inland and abroad is essential. Good salary and prospects.—Reply in confidence to Box 461. (461)

Donald Leaver Limited

1 LONDON ROAD, STAINES, MIDDX. Phone STAINES 55271-2

SECONDHAND PLANT AND MACHINERY (444)

MACHINERY FOR SALE

6d. a word, Minimum 12/6 Box 2/-

BLACKFRIARS 24 x 12 rotary cutter with 20 h.p. motor and starter. One complete set of spare knives, together with pneumatic take-off equipment, vibratory screen and steel staging. The above comprehensive equipment is in excellent condition and is available immediately. Price complete £800. Ex works.—Box 359. (359)

BRIDGE Banbury No. 11 with 250 h.p. drive; Intermix K4 with 110 h.p. drive; Bridge Banbury No. 3A with 110 h.p. drive; three 40in. x 16in. double geared mills.—Reed Brothers (Engineering) Ltd., Replant Works, Woolwich Industrial Estate, London, S.E.18. Tel. Woolwich 7611 (6 lines). (455)

'COTSWOLD' dipping machines and circulating tanks for latex and PVC. New catalogues now available on request.—Lionel Hook and Sons, Ebley, Stroud, Glos. Tel.: Stonehouse 614/5. (380R)

ANOTHER RUBBER WORKS PURCHASE—

(Our 5th this year!)

We have just purchased rubber plant at a footwear factory in Lancashire, some of the plant only approx. six years installed. We have already sold some items but following available subject unsold at time of going to press:

THREE 40″ x 16″ IDDON RUBBER MILLS approx. 6 years old, cast steel frames. Individually motorised, 50 h.p. E.E.C., 17″ Radicon gear, electro brake, etc. Single geared, even or friction end gears to client's choice. Machine-cut gears.

ONE ditto but cast-iron frames

50″ x 20″ HEAVY-DUTY IDDON MILL RUBBER
Single geared. Machine-cut gears, 75-h.p. motor, electro brake, 24″ Radicon gear. Cast steel frames.

HYDRAULIC BALE SPLITTER IDDON BROS.
21″ ram. Turbine-type hydraulics.

TWO RUBBER SPREADERS, 64″
with infra-red and steam bed heating

SEVERAL SOLUTION MIXERS
(One hydraulic tilting)

48″ x 16″ D.G. Mill, 75 h.p. with gear
28″ x 16″ ,, ,, Motor and gear
36″ x 16″ ,, ,, Bertram
39″ x 20″ ,, ,, Olier (French), even speed
20″ x 10″ fluted roll marking mill
100-h.p. 24″ Radicon reduction gear
42″ x 18″ Bridge D.G. mill, motor and gear
Two Hollings & Guest presses, 32″ x 27″
Two vertical boilers, approx. 9′ x 4′. Est. 100 lb.
Dial weigher, Avery, 800 lb., nearly new

We are prepared to quote inclusive of complete rebuilding—rolls re-ground, new bearing liners fitted, gearing altered or renewed, Lunn safety equipment fitted, mills mounted on vibro beds and mountings. Drawings and photographs and low-price quotes from:

HODSON

& CO. (MACHINERY) LTD.

SPRING MILLS, TOTTINGTON, BURY

TEL.:- TOTTINGTON 123/4 LANCS

(457)

MACHINERY FOR SALE

(continued)

FOR sale as a going concern a fully-equipped and working rubber compounding plant. Freehold premises, 3a Banbury mixer, two 40 x 16 mills and 4in. extruder. Complete with staff and situated in North London.—For full details write Box 459. (459)

FOR sale: Windsor 6oz. plastic injection moulding machine, 4-column horizontal type. Hydraulic operation, automatic temperature control.—Fred Watkins (Engineering) Ltd., Coleford, Glos. Phone Coleford 2271/5. (422)

MANUFACTURERS of roughing machines for rubber sheeting, sponge rubber, splitting machines, leather cloth plant, embossing plates and rollers, spreading machines and presses.—G. L. Murphy Ltd., Imperial Works, Menston, Nr. Leeds. (238R)

STEAM-HEATED rubber vulcanizing oven, 4ft. dia. x 6ft. long, in first-class condition.—Box 358. (358)

VULCANISER (Autoclave), 8ft. int. dia. x 14ft. long, fitted with quick closing door and safety device; 100lbs. w.p. and vacuum, tested 200lbs. p.s.i. All mountings, rail track, bogies. Air compressor, air receiver, vacuum pump, motor, etc. Very little used, condition equal to new.—Apply Box 448. (448)

ADVERTISERS

YOUR ANNOUNCEMENTS MAY BE DISPLAYED IN THE CLASSIFIED SECTION AT THE FOLLOWING RATES

PER INCH SINGLE COLUMN

1 INSERTION £3. 0. 0. *7 INSERTIONS* £2. 15. 0.
13 INSERTIONS OR MORE £2. 10. 0.

MACHINERY WANTED

6d. a word, Minimum 12/6. Box 2/-.

REQUIRED immediately second-hand rubber bale splitter in good condition.—Phoenix Rubber Co. Ltd., Slough, Bucks. (357)

GERMAN Chemical Factory wants Roller Mixing Mill, second-hand but in good condition.

Length of roller gap	**2100 mm**
Diameter of rollers	**665 mm**
r.p.m. of backward roller	**14.5**
r.p.m. of front roller	**11.9**
Fricton	**1 : 1.22**

with gear for angle drive.

Offers to be addressed to:

BOX 456.

(456)

AGENCIES and REPRESENTATIVES

6d. a word, Minimum 12/6 Box 2/-

PRINCIPAL executives of a small American firm specializing in the manufacture and distribution of rubber and plastic chemicals, active in the eastern United States, will be in Europe during October and in attendance at Rubber Conference in West Berlin and Plastics Conferences in Amsterdam and Utrecht. Will also be in Rome, Paris and London two or more days each. Interested in discussion with progressive European manufacturers of chemical specialities whose products are designed for the rubber and/or plastics industries who wish United States representation or, preferably, who are interested in re-sale arrangements. Present United States principals include B. F. Goodrich Company, Naugatuck Chemical and Pitt-Consol (division Consolidated Coal Company).—If there is interest in arranging a meeting please write directly to Wyrough and Loser, 2 Brunswick Circle Extension, Trenton 8, New Jersey. A brief résumé of products which may be discussed would be helpful. (450)

THE Castle Rubber Co. Ltd., Warrington, have a vacancy for a sales representative in the London and Home Counties area. Must be car owner. Replies treated in confidence. (458)

BUSINESS OPPORTUNITIES

6d. a word, Minimum 12/6 Box 2/-

ADVERTISER having distribution facilities for a range of 'inflatables,' to the value of £50,000 to £150,000 per annum, would welcome offers, in confidence, of good quality lines at competitive prices.—Write Box 460. (460)

ADVERTISER is interested in acquiring controlling interest in small company manufacturing rubber adhesives or chemicals with development possibilities.—Particulars to Box 453. (453)

PLEASE NOTE

INSTRUCTIONS FOR THE CLASSIFIED ADVERTISEMENTS MUST REACH US BY ***10 A.M. WEDNESDAY MORNING*** *OF EACH WEEK*

Address Box Number replies to:
Box No.—, RUBBER JOURNAL AND INTERNATIONAL PLASTICS
Maclaren House, 131 Great Suffolk Street, London, S.E.1

RUBBER JOURNAL AND INTERNATIONAL PLASTICS

The only Weekly serving the Rubber and Plastics Industries

T. W. BARFOOT
AND
W. F. WEBB

GENERAL ENGINEERS AND TOOLMAKERS

ORDNANCE BUILDINGS
SEAFORD, SUSSEX
Telephone: Seaford 2544

LONDON OFFICE:
157 VICTORIA STREET, LONDON, S.W.1
Telephone: VICtoria 4858

LONDON TRANSPORT AND ROLL RECEIVING DEPOT:
SOUTH NORWOOD, S.E.25

Engineers to the Milling, Plastic and Rubber Industry

INSTALLATION MAINTENANCE REPAIRS

Roll Fluting and Grinding

NEW RUBBER & PLASTIC MIXING MILLS · LABORATORY MILLS

CHILLED IRON ROLLS · TUBE ROLLS

SOUTH OF ENGLAND AGENTS FOR HENRY SIMON LIMITED
Flour and Provender Milling Engineers, Stockport

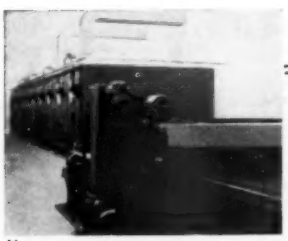
HIGH-STYRENE MASTERBATCH

Ends a costly mix-operation

Firestone FR-S 158 is a synthetic rubber reinforced with *high styrene resin* and shipped in easily weighable pellets. It ends costly mixing for many light-colour rubber products requiring hardness combined with moderate resistance to flexing and abrasion.
Firestone offers you the largest, most complete line of polymers available. Write or call us today for more complete information on FR-S polymers for your products.

Firestone
Making The Best Today Still Better Tomorrow

HENRY GARDNER & CO. LTD.,
FR-S Distributor in the United Kingdom for Dry Rubber
2, METAL EXCHANGE BUILDINGS, LEADENHALL AVENUE, LONDON, E.C.3



continuous washing and drying equipment; mixers; hydraulic moulds; conveyors etc.

MACHINES for the LATEX FOAM INDUSTRY

Apply to:
eur-O-matic
N.V. Maatschappij voor Mechanisatie
WEESP · HOLLAND
P.O.B. 25
Grams: Euromatic-Weesp
Telex: 14182 — Tel: 2843

MINERAL FILLERS

(Stockalite, Speswhite, Supreme, Devolite, etc.)

SPECIALLY PRODUCED FOR THE RUBBER TRADE

Have you yet tried **Takolin 22?** *If not, send for sample*

ENGLISH CLAYS LOVERING POCHIN & Co Ltd
ST. AUSTELL CORNWALL

Also at London, Manchester, Stoke, Edinburgh, Leominster and Willington-Quay-on-Tyne

Sutcliffe

MOULDS

FOR THE RUBBER INDUSTRY

•

PRECISION ENGINEERING COMPONENTS

TO SPECIFICATION

•

Please write for further information:—

SUTCLIFFE ENGINEERING COMPONENTS LIMITED
CHURCH STREET · HORBURY · WAKEFIELD
TELEPHONE: HORBURY 346

INDEX to ADVERTISERS

Page numbers below indicate the last occasion on which an advertisement appeared in this volume. Where the advertisement appeared on the covers or in the supplement, the figure in parentheses is the number of this issue

	Page
A.E.W. Ltd.	v (6)
Allcock, J., & Sons Ltd.	vii
Amalgamated Oxides (1939) Ltd.	v (6)
Anchor Chemical Co. Ltd.	Cover i
Anderson, Joseph, & Sons Ltd.	i (6)
Armour Hess Chemicals Ltd.	—
Associated-Rediffusion Ltd.	—
Astor Boisselier & Lawrence Ltd.	206
Baker Perkins Ltd.	Cover iv (2)
Barfoot, T. W., & Webb, W. F.	255
Barwell Engineering Ltd.	244
Belgrave Industries (Exports) Ltd.	29
B.I.P. Chemicals Ltd.	v (1)
Birch, Singleton, W., & Sons Ltd.	151
Boston Marine & General Eng. Co. Ltd.	91
Bramor Ltd	75
Bridge, David, & Co. Ltd.	Cover ii
Bright, John, & Bros. Ltd.	240
British Electrical Development Association	—
British Geon Ltd.	124
British Nylon Spinners Ltd.	v
British Recovered Rubber Co. Ltd.	iii
British Resin Products Ltd.	v (4)
British Titan Products Co. Ltd.	—
Bush Beach & Segner Bayley Ltd.	88
Cabot Carbon Ltd.	195
Carter Bros. (Rochdale) Ltd.	159
Catalin Ltd.	—
Chemical & Insulating Co. Ltd., The	—
Cleggswood Oil Distillery Ltd.	38
Cohen, George, Sons & Co. Ltd.	—
Collison Engineering Co. Ltd.	—
Columbian International (Gt. Britain) Ltd.	i
Consolidated Zinc Corporation (Sales) Ltd.	vi (5)
Crosfield, Joseph, & Sons Ltd.	128
Croxton & Garry Ltd.	222
Cruickshank, R., Ltd.	—
Davis Plastics Ltd.	—
Draper, Henry, & Co. Ltd.	—
Dietzel, Hugo	iv (2)
Dixon, T. H., & Co. Ltd.	i (5)
Dunlop Rubber Co. Ltd.	123
Du Pont Co. (United Kingdom) Ltd.	224
Durham Raw Materials Ltd.	vi (2)
Economist Intelligence Unit Ltd., The	—
Ellison, George, Ltd.	ii (2)
English Clays Lovering Pochin & Co. Ltd.	255
eur-O-matic	255
Factice Research & Development Assoc.	—
Fawcett Preston & Co. Ltd.	Cover ii (6)
Fellner & Ziegler GmbH.	—
Ferguson, A. O., & Co. Ltd.	ix
Ferguson, James, & Sons Ltd.	viii
Ferguson Shiers Ltd.	202
Firestone Tyre & Rubber Co. Ltd.	255
Foamair Ltd.	187
Forrest, H., & Sons (E.P.M.) Ltd.	—
Gardner, Henry, & Co. Ltd.	—
General Utilities (Stockport) Ltd.	vi (6)
Goodyear Tyre & Rubber Co. Ltd.	239
Grantham Rubber Machinery Co. Ltd.	—
Greeff, R. W., & Co. Ltd.	viii (5)
Gresham & Craven Ltd.	ii (6)
Gummi und Asbest	iv (2)
H. K. Import & Export Ltd.	vi (2)
Halsteads Engineers (Leyland) Ltd.	viii
Hankin, Geo., & Co. Ltd.	iv (6)
Hardman & Holden Ltd.	234
Hatcham Rubber Co. Ltd.	iv
Hay & Robertson Ltd.	206
Hercules Powder Co. Ltd.	—
Hilton, Wallace, & Co. Ltd.	vi (6)
Hodgson, Richard, & Sons Ltd.	—
Hubron Rubber Chemicals Ltd.	Cover iii
Hughes & Hughes Ltd.	185
Hunt Heat Exchangers Ltd.	223
Iddon Bros. Ltd.	ii
Imperial Chemical Industries Ltd. (Billingham)	135
Imperial Chemical Industries Ltd. (Dyestuffs)	191
Imperial Chemical Industries Ltd. (Plastics—Butakon)	Cover ii (4)
Imperial Chemical Industries Ltd. (Terylene)	233
Institution of the Rubber Industry	21
International Corporation Ltd.	—
International Synthetic Rubber Co. Ltd.	227
Ioco Ltd.	39
Kautschuk und Gummi	185
Kendell, T., & Sons Ltd.	vii (6)
Ketjen Carbon	56, 57
Latex Engineering Co.	210
Lavino (London) Ltd.	—
Leeds & Bradford Boiler Co. Ltd., The	x (3)
Lonabarc Ltd.	iv
Lord, R., & Sons Ltd.	vi (4)
Marsman, G. J.	—
McKechnie Bros. Ltd.	202
Maclaine, Watson & Co. Ltd.	vii (1)
Micafine Ltd.	ii (6)
Monsanto Chemicals Ltd.	—
Muehlstein, H., & Co. (London) Ltd.	256
Muller, Max	vii (2)
National College of Rubber Technology	—
Nederlandsch Verkoopkantoor Voor Chemische Producten N.V.	56, 57
New Conveyor Co. Ltd.	vi (4)
Northwestern Rubber Co. Ltd.	vi
Novadel Ltd.	—
Oldham, Thomas, Ltd.	—
Oswald & Duncan Ltd.	vi
Philblack Ltd.	114
Phoenix Rubber Co. Ltd.	iii (4)
Planters Engineering Co. Ltd., The	vi (4)
Polymer (United Kingdom) Ltd.	161
Preston Tyre Fabric Manufacturing Co. Ltd.	vii
Price's (Bromborough) Ltd.	131
Pullen, James H., (1942) Ltd.	iv (4)
Reed Bros. (Eng.) Ltd.	242
Revue Generale du Caoutchouc	—
Rhein-Chemie GmbH.	viii (3)
Robinson Bros. Ltd.	x
Robinson, Joseph, & Co. Ltd.	208
Rotunda Ltd.	—
Rubber Age (New York) Ltd.	iv (6)
Rubber Latex Ltd.	210
Rubber Regenerating Co. Ltd., The	Cover iv (6)
Shaw, Francis, & Co. Ltd.	Cover iv
Shell International Chemical Co. Ltd.	169
Shell Mex & B.P. Ltd.	—
Smith, Alfred, Ltd.	iii (3)
Smith, Wilfrid, Ltd.	ix
Sondes Place Research Laboratories Ltd.	—
Squire, Frederick, Ltd.	113
Stechler, L., & Co. Ltd.	iv (6)
Steel, J. M., & Co. Ltd.	Cover ii (2)
Steele & Cowlishaw Ltd.	—
Stocker, W. B., & Co. Ltd.	vi (6)
Storeys of Lancaster	viii (6)
Stott, James, Ltd.	iii (6)
Sutcliffe Engineering Components Ltd.	255
Sutcliffe Speakman & Co. Ltd.	204
Swinnerton, S. & J. H., Ltd.	—
Tanner Bros. (Greenfield) Ltd.	—
Tilghman's Ltd.	—
Union Carbide Ltd.	—
United Norit Sales Corporation Ltd.	v (6)
United Wire Works Ltd., The	ii (1)
Universal Oil Co. Ltd.	—
Universal Oil Products Co.	165
Vacu-Blast Ltd.	140
Vulcan Equipment Co. Ltd.	—
Wallace, H. W., & Co. Ltd.	ix (5)
Wallis Engineering Co.	173
Welwyn Tool Co. Ltd.	184
Wiggins, Teape Group, The	—
Witco Chemical Co. Ltd.	242
Zama Ltd.	iv (5)

Muehlstein

PLASTIC VIRGIN OR REPROCESSED

SYNTHETIC RUBBER OFFGRADE OR REPROCESSED

SCRAP RUBBER AND PLASTICS

H. MUEHLSTEIN & CO. (LONDON) LTD.

THAVIES INN HOUSE, 3-4 HOLBORN CIRCUS, E.C.1 Tel. FLEet Street 6976

AN ASSOCIATE OF H. MUEHLSTEIN & CO. INCORPORATED, 521 FIFTH AVENUE, NEW YORK 17, N.Y.

Printed in Great Britain by F. J. PARSONS, Ltd., London and Hastings, and published by the Proprietors. MACLAREN & SONS, LTD., Maclaren House, 131 Great Suffolk Street, London, S.E.1

BRITISH GENERAL PURPOSE FURNACE BLACK

★

BEST FOR SYNTHETICS

A PRODUCT OF
UNITED CARBON BLACK LTD

Samples and full Technical Data from Sole Distributors—

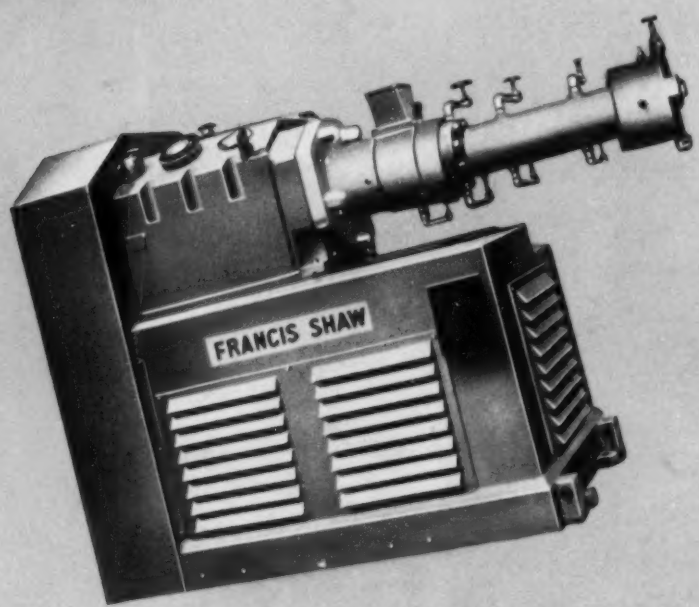
HUBRON RUBBER CHEMICALS LTD
WILFRID SMITH LIMITED

ALBION STREET, FAILSWORTH, Near MANCHESTER
Telephone: FAILSWORTH 2691 (5 lines) *Telegrams:* 'HUBRONRUB'

16 PHILPOT LANE, LONDON, E.C.3
Telephone: MANSION HOUSE 2064
Telegrams: 'ACCOLLYST,' BILGATE, LONDON

behind every
Francis Shaw machine

research–design–quality engineering



A429

Constant research and development, close co-operation with users, advanced design, selected high quality materials . . . These, coupled with long experience, help to create processing machinery of unrivalled performance.

Francis Shaw rubber extrusion machines are made in scroll sizes from one inch upwards. The 3-inch model illustrated is one of the new Shaw cold feed extruders

- **Consistent quality of extrusion**
- **Saves space, labour and capital by eliminating pre-warming of stock**
- **Range of sizes 1″ to 6″**
- **Special design of screw, barrel and drive**

Francis Shaw

FRANCIS SHAW & COMPANY LIMITED · MANCHESTER 11 · ENGLAND

TELEGRAMS: "CALENDER" MANCHESTER · TELEPHONE: EAST 1313-8 · TELEX: 66-357

London Office: 22 Great Smith Street London SW1 · Telephone: Abbey 3245 · Telegrams: Vibrate London · Telex: 22250

Canada: Francis Shaw (Canada) Ltd Grahams Lane Burlington Ontario · Telephone: Nelson 4-2350

Telegrams: Calender Burlington Ontario · Telex: Canada Calender Hamilton 021/662

OVERSEAS AGENTS THROUGHOUT THE WORLD

P4391-2